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CONTRIBUTIONS
TO THE
PATHOLOGY AND TREATMENT
OF
DISEASES OF THE UTERUS.

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PART I.

PROPOSITIONS REGARDING UTERINE DIAGNOSIS.

The symptoms by which the diseased states of the various individual organs of the body are detected and discriminated from each other, are divisible into two great classes. The first class (forming the *Functional*, *Dynamical*, or *Rational* symptoms of various pathological writers,) includes all the ascertainable derangements of functions, local and sympathetic, that may be present; the second class (constituting the *Physical* symptoms of the same authors,) comprehends all the ascertainable circumstances connected with the structure, density, form, and other anatomical conditions of the organ which is the primary seat of disease.

Our diagnosis is always the more exact and perfect the more we can combine the information that may be gained from both classes or sets of symptoms,—and especially the more that we can manage to confirm or correct the knowledge derivable from our study of the functional symptoms, by ascertaining, by the cognizance of our own senses, the exact physical state of the affected organ with which these symptoms happen to co-exist.

In morbid affections of the exterior parts of the body, the Physical Diagnosis of the disease can be in general easily accomplished, by the direct tactile examination and visual inspection of the affected organ. It is this facility of examination and inspection which renders the diagnosis of these more external diseases, which belong to the province of the surgeon, so much more precise and accurate than the discrimination of those maladies of the more internal parts of the body, that fall under the investigation of the physician.

Within the last half century, however, the diagnosis of the diseases of the deeper seated organs has been very greatly ad-

vanced by the application of various measures to improve our knowledge of their existing structural states. In fact, the medical science of the present day owes its superiority over that of an earlier date to no circumstance more, than to the increased degree of attention that has, for a considerable time past, been devoted to the study and improvement of Physical Diagnosis. As the knowledge of the structural lesions which the various organs may undergo from disease, has, of later years, extended in the hands of the pathological anatomist from his examination of the body after death, the practical physician has, for the purposes of his diagnosis and the guidance of his treatment, exerted himself in discovering means of detecting these same morbid alterations during the lifetime of his patient, and thus of studying, if I may so speak, necroscopic anatomy upon the living body. It is true that, in the discrimination of the diseases of some organs, as of the brain or spinal cord, we are, with some slight exceptions, obliged to trust entirely to the functional symptoms, because we have no means of detecting the morbid states of these organs except in the derangements produced in their functions. Hence arises the occult character of this class of diseases. In the diseases, however, of other organs, as those of the chest, the fact is different. Formerly the affections of the thoracic organs were also, as those of the head still are, detected and distinguished by their functional symptoms and derangements only,—and their diagnosis was consequently always more or less doubtful and often exceedingly obscure. Now that we can ascertain, with so much precision, the existing anatomical state of the lungs and heart by auscultation, percussion, &c., and thus combine the physical with the functional diagnosis of pulmonary and cardiac diseases, much of the difficulty and obscurity that was formerly connected with their detection and discrimination has entirely disappeared.

In ascertaining the Diseases of the Uterus, we have it in our power to avail ourselves of both the classes of symptoms of which I have spoken; or, in other words, we may form our judgment of its morbid conditions, both by studying the vital Functional Derangements, local, sympathetic, and constitutional, that may be present; and by informing ourselves, by Physical Diagnosis, of the exact existing state or states of the organ itself. Each of these classes of symptoms may afford us most important information; and in all cases where both can be had recourse to, our diagnosis will be greatly more certain under their combined evidence, than if the data furnished by either were alone trusted to. Of the two (if we are to make comparisons between them) the physical symptoms are assuredly, in most cases, by far the most valuable and trustworthy—and yet in the common course of me-

dical practice, the testimony which they are capable of affording, is but too frequently neglected and overlooked—and the functional and much less faithful class of symptoms alone relied upon, as well in forming the diagnosis, as in directing the measures of treatment.

Thus, if we attempt to analyze the mode in which the medical practitioner usually endeavours, in any suspected case of uterine disease, to detect the presence and character, or ascertain the absence of such an affection, we will find, I believe, that he generally proceeds, by taking into consideration some or all of the following sources and varieties of information:—

First, The local and functional state of the uterus, so far as it is indicated by the quantity, character, periodicity, &c. of the menstrual and mucous secretion of the organ; by the occurrence or non-occurrence of morbid uterine or vaginal discharges, as of blood, serous fluid, pus, &c.; by the existence or not of morbid sensations in the region of the uterus, such as different modifications of pain, intermittent or continuous, feelings of heat, weight, tension, bearing down, &c.; and, if the patient be married, by the reproductive powers of the organ, as shown by sterility, by the recurrence of abortions, &c.

Secondly, The presence or absence of various morbid affections of the neighbouring viscera, particularly of the rectum and bladder, and of branches of the vessels and nerves passing through the pelvis,—as indicative either of their sympathetic irritation or of their mechanical compression by the enlarged or displaced uterus.

Thirdly, The existence or non-existence, of secondary local neuralgic pains in the mammae, along the lower extremities, in the loins, and at points along the course of the spinal column, in the parietes of the thorax or abdomen on one or other side, (and especially under the left breast, and under the margin of the ribs,) along the colon, &c., increased in their intensity by any causes of increased action in the uterus itself, by the erect posture, by menstruation, &c.

Fourthly, The state of the general constitution of the patient, as marked by various degrees of deviation from the standard of health—and especially by the supervention of nervous, hysterical, dyspeptic, chlorotic, or cachectic symptoms.

The several preceding series of morbid phenomena consist of derangements in the vital actions of the uterus—or of other parts and organs secondarily affected—or of the constitution at large—and so far strictly belong to the class of Functional or Dynamic symptoms only. Up to a late date in the history of uterine diagnosis, most practitioners remained, and some still remain satisfied with the degree of knowledge which is afforded by the above sources of information. No one, however, who is practically acquainted with the diseases of the uterus can have any hesitation in declaring that the symptoms derivable from these sources, are utterly inadequate, in the general routine of such cases, for the

purposes of correct diagnosis, and are constantly liable to lead into fallacy and error when their individual evidence is alone trusted to. In making this observation, I do mean to allege that these classes of symptoms are not sufficient to give us the power, in most, though not in all instances, of detecting the actual presence of uterine disease. They are perfectly deficient, however, in this other point, that, by their single unassisted aid, we cannot ascertain what the exact character and nature of the existing disease is—nor, consequently, what may be the proper line of treatment requisite for its alleviation or removal. They may generally, in other words, enable us to decide that the uterus is the seat of some morbid condition, but are not adequate to inform us what that morbid condition really is. They may show that the organ is affected, without showing us how it is affected.

If we attempted to throw the generalities, regarding the diagnosis of uterine diseases, into propositions, we would, therefore, be inclined to lay down the following as our

FIRST PROPOSITION.

The general and local Functional Symptoms of disease of the Uterus, are such as enable us to localize, without enabling us to specialize, the exact existing affection of the organ.

One or two instances may serve to illustrate and impress more strongly than any mere abstract statement, the force and truth of the above proposition.

In the changed and changing state of the uterus during Pregnancy, we have in all cases a constancy in the primary site and character of the existing irritation—(if we may apply a term so far pathological, to a state which, in its object, at least, is strictly physiological.) But though in the pregnant female the local uterine irritation is constantly and specifically the same in its source and nature, the local and constitutional phenomena or Functional Symptoms to which it gives rise, are well known to vary infinitely in different individuals, and even in the same individual in different pregnancies. In one case, the health of the woman remains in all respects unimpaired, notwithstanding the altered condition of the uterus. In a second, we find her suffer from distressing local symptoms, such as weight, distension, and bearing-down sensations in the interior of the pelvis, derangements in the state of the bladder and rectum, œdema and stiffness in the lower extremities, &c. In a third, the local affections may be slight or altogether absent, but there may be severe and even serious sympathetic affections of the general constitution,—or of particular and distant organs,—such as of the stomach with cardialgia or vomiting,—or of the brain, with headache and sleeplessness, or even with convulsions or mania.

Again, in other instances, we occasionally find all the usual symptoms—both local and constitutional—of pregnancy present, in so marked a degree, as to impress both the patient and the practitioner with the certainty of the existence of that state; and yet these symptoms may all, after a short time, be found dependent on the irritation produced by some subacute functional or organic disease of the uterus that has no relation whatever to utero-gestation, except in the identity of its primary seat, and in the similarity of the symptoms to which it gives rise.

The few well-known facts to which I have thus adverted, directly point to the two following important deductions: 1st, That in pregnancy we have the same identical condition of the uterus not always accompanied by the same identical symptoms; and, 2d, That the usual concurrence and succession of functional phenomena to which pregnancy generally gives rise, may be induced by other states of the organ than the state of utero-gestation.

The same two important inferences are true in regard to the various individual morbid affections of the uterus. The marked uncertainty which exists regarding the effects produced by the condition of the organ in *pregnancy*, holds equally good regarding the effects produced by it in its different states of actual *disease*. In uterine disease, as in pregnancy, the same specific affection of the organ excites sometimes very different phenomena in different cases; and the same specific phenomena frequently result from affections of the organ, that are entirely at variance with each other in their pathological character, in their course, and in their treatment.

Probably, the most common organic disease of the uterus consists in the development of those fibrous tumours, which are so frequent in the tissues of the body and fundus, and so rare in those of the cervix of the organ. These tumours do not, in some cases, occasion any very decided symptoms, and are often, as I have repeatedly known, only accidentally discovered in the living subject, after reaching a very large size; or, as frequently happens, they are not suspected or detected before they are found on the post-mortem examination of the body. I have one such tumour in my museum, which weighed 14 lbs., and where the principal or only symptom during life was the mere enlargement of the lower portion of the abdomen, produced by the presence of this great mass. But in other cases, these fibrous tumours of the uterus, even when still small, often produce distressing irritation among the pelvic viscera, and derange in various ways the physiological function of the organ,—producing sometimes diminution or suppression of the menstrual secretion, or again, (especially when they are situated near the mucous surface) inducing leucorrhœa and attacks of menorrhagia, that are occasionally most formidable, both from their severity and permanency.

But the remarkable circumstance with regard to this, and almost all other structural diseases of the uterus, is, that though the walls of the organ be the seat of extensive morbid transformations and deposits, the menstrual secretion frequently remains so regular and normal, as to deceive both the patient and her medical attendant; and I have known conception—the principal physiological function of the uterus—to take place, not only where fibrous tumours were present, but, in more than one case, where the cervix of the organ was the seat of malignant disease that destroyed the patient shortly after her abortion or delivery.

Let us consider, for a moment, one other instance, illustrative of the important practical fact, that the same organic disease of the uterus is often attended by the most varied, and even apparently opposite sets of external symptoms.

Scirrhus degeneration of the cervix uteri is an affection constantly occurring in the course of practice. This disease sometimes gives rise, at an early period of its progress, to severe pains and sufferings in the uterine region; to great local irritation of the bladder and neighbouring parts; and to the supervention of marked sympathetic, and constitutional phenomena. In other numerous instances, however, it marches onwards to an advanced stage, without occasioning almost one single symptom in the way of local pains, discharges, or otherwise, calculated to rouse the attention of the patient to the impending work of destruction that is, with slow but fatal steps, going on within her. I have repeatedly seen cases of the kind, where the disease was under assiduous treatment for simple leucorrhœa, or menorrhagia, merely because no examination had been instituted, in order to learn upon what local states the leucorrhœa or menorrhagia depended. In other cases, the intensity of the sympathetic or secondary symptoms may be such, as to conceal and disguise entirely the primary disease. In an instance of fatal carcinoma uteri that occurred lately in this city, the symptoms complained of during the life-time of the patient, were entirely referred to the urinary, and not to the uterine organs. I have known the mammæ most actively treated by leeching, &c. for the sympathetic pains present in them, while the state of the uterus itself (the primary cause of the pains) was altogether held out of view, until at last, when attention was ultimately called to it, its whole cervix was found utterly destroyed by cancerous ulceration.

While we thus not unfrequently find the most malignant organic diseases of the uterus more or less latent or masked in their symptoms, we have, on the other hand, sometimes the most severe local and constitutional symptoms of uterine disease developed in instances of slight and remediable organic affections of the part, as in cases of simple Ulcerative and Granular Inflam-

mation of the cervix ; and these symptoms may be all present in their most aggravated forms for months and even for years, where the local examination and final result show us that there is certainly no organic disease whatever, as in cases of "irritable uterus," or hysteralgia. Indeed, in some females, we have all these symptoms strongly but temporarily excited at every recurrence of the catamenial discharge, in connection merely with that congestion and increased vital activity of the organ which accompanies its natural menstrual secretion.

We may meet, in short, with the same train of local and secondary functional symptoms indicative of uterine disease, in neuralgic, in congestive, in inflammatory, and in malignant diseases of the organ ; and whether we explain it by the slowness with which morbid depositions are apt to develop themselves in this organ,—by the slight sensibility of the component tissues of the viscus,—or by the intermittent and latent nature of its vital actions,—there can be no doubt of the fact, that there seems to be no organ in which there is a less strict relation observable between the intensity and character of the existing pathological disease, and the intensity and character of the accompanying symptoms, or between the exact nature of the structural lesions that are present, and the exact combination and succession of functional derangements to which they give rise. Hence, in order to form in any case a correct diagnosis in regard to the existing state of the uterus, it is necessary to ascertain, as far as possible, if any anatomical alterations may be present in the structure and organization of the organ—as well as in its physiological functions—and what these alterations are. In other words, we must institute a local examination of the organ itself, by the sense of touch, and, if necessary, by the use of the speculum. It is assuredly only by doing so, that we can hope with any certainty to decide upon the specific nature of the uterine disease that may be present. We may make the general diagnosis of the existence of uterine disease, by the consideration of the functional derangements to which such disease gives rise. We can only make the *differential* diagnosis of what the specific disease really is, by aiding this by the examination of the structural condition of the organ itself.

In deciding upon the existence or non-existence of pregnancy, especially in any cases of importance or doubt, no medical man, who valued his own professional character, would deem himself justified in offering a final and dogmatic opinion, from the mere functional symptoms only, (which we have already seen to be sometimes very equivocal,)—nor would he venture to form a definite judgment, until he had made a sufficiently accurate physical examination of the state of the uterus itself. In deciding in the same way upon the pathological nature, and conse-

quently upon the line of treatment which any marked uterine disease may require, we believe exactly the same caution to be necessary, and the same local examination to be demanded, where there exists any doubt, and where the examination is not otherwise counter-indicated. The local examination of the uterus is had recourse to, in the case of pregnancy, to settle a point which time itself would alone ultimately decide. The local examination is had recourse to in the case of uterine disease, for an object of much more immediate and practical moment, namely, to obtain that information which can alone enable us to form a proper and precise judgment of the nature of the case before us, and to select the proper remedial measures for its mitigation, arrestment, or timely removal. We have seen some unfortunate cases, where its unwarrantable omission in the earlier and curable stages of disease, has allowed the morbid action to make so extensive and fatal progress, before sufficient alarm was excited, as to be utterly beyond the reach of treatment. Consequently, it appears to us, that in uterine diagnosis, it may be most safely and justly laid down as a

SECOND PROPOSITION.

In almost all instances of diseases of the Uterus, it is only by the Physical Examination of the organ itself that we can distinguish the precise nature of the existing affection, and fix its character, extent, &c.

The information thus obtained may be merely *negative*, but it is not the less useful either in a diagnostic or in a practical point of view. In a case of morbid discharge of blood from the vagina, for example, we may only ascertain that there is no appreciable organic disease of the uterus. Our prognosis and treatment, however, of a case of menorrhagia would, under such circumstances, be very different from those which we would adopt, if, by the same examination, we discovered a state of simple ulceration of the cervix, or congestive enlargement of the uterus, or the presence of a polypus, or the existence of a cauliflower excrescence, or carcinomatous degeneration.

Local examination, however, usually affords us much *positive* and direct information with regard to the seat and character of the existing disease, by informing us of all those changes that have taken place in the vagina and uterus, which can be recognised by touch or sight. By it we are thus often enabled to detect the different morbid conditions of the cervix, whether congestive, inflammatory, or more strictly organic. We can generally distinguish, by the same means, these states from each other, and discriminate between the equally enlarged and dark coloured congestion of the cervix, and the different forms of inflammation

to which its structures are liable, whether that inflammation has assumed the granular, ulcerative, aphthous, or pustular type;—between simple, syphilitic, corroding, and carcinomatous ulcers of this part;—between granular enlargements, cauliflower excrescence, and cancerous degeneration of the cervix;—between the vaginal tumours formed by prolapsus, or by inversion of the uterus, and those formed by the presence of a simply hypertrophied cervix, or of a true polypus;—and between the general diffused enlargement of the organ produced by hypertrophy of its walls, or distension of its cavity, and that irregular, roundish, knobbed form which it almost invariably assumes in cases of fibrous tumours, and in such cases only.

THIRD PROPOSITION.

The Physical Examination, as hitherto practised, seldom enables us to ascertain accurately, the organic condition of more than the cervix, and lower part of the body of the Uterus.

If the uterus be large, and the woman of a spare and lax habit, we may indeed be able to feel the fundus of the organ through the walls of the abdomen, by the hand pressed in above the pubis. It generally, however, lies so low in the pelvis, and usually moves away so readily under the touch and pressure of the fingers, that, even in such persons, this means of examination is of no great avail. In all persons of an opposite habit, and in most cases where the uterus is misplaced without enlargement, the hypogastric examination is of little or no use whatever.

By examination per vaginam with the finger, we can only, (except when the uterus is prolapsed,) feel the cervix, and the parts resting on the roof of the vagina. Hence, diseased states of the cervix having been far more easily ascertained than diseased states of the body and fundus of the organ, have, probably, been very much over-rated, both in frequency and importance, at least since the speculum has come into more general use. In regard to the parts that are felt through the roof of the vagina, the touch alone does not, in many instances, give us information at all sufficiently satisfactory and decisive. We can, no doubt, when the tumour is large, often ascertain with considerable accuracy its size and form, by combining the vaginal examination with the aid derived from examination by the rectum, and above the pubis. But we are still, in many cases, left entirely in the dark as to whether the existing tumour is an enlargement of the whole mass of the uterus, or a distension of its cavity, or a morbid growth; and, if the latter, whether the growth is seated in the uterus itself, or in one of the ovaries or other neighbouring parts. If the tumour is small, and cannot be felt above the brim, we then have it not even

in our power to ascertain its size and form, as we can examine it only on one side, namely, on that next the vagina. Under these circumstances we are unable to tell whether it arises from a new morbid structure attached to the uterine parietes, or from a simple displacement, or flexion of the fundus of the uterus itself.

To meet these, and other difficulties in uterine diagnosis, I have for some time past been in the habit of using a metallic Uterine Sound or Bougie of nearly the size and shape of a small male catheter, which, when introduced, as it can easily be done, into the interior of the uterus, and manipulated there in different ways, has proved to me of great service in rendering the diagnosis of the diseases in question, and more particularly those of the *fundus*, *body*, and *cavity* of the organ, (parts usually considered beyond the reach of examination) much more accurate and precise than can be effected by any other means with which I am acquainted. I am induced to bring this means before the notice of the profession, under the strong hope that the instrument will be found of equal service in the hands of others; and the results which have been obtained by it seem already sufficient to enable us to place, among the generalities of uterine diagnosis, the following as a

FOURTH PROPOSITION.

It is possible, by the use of a Uterine Sound or Bougie introduced into the uterine cavity, to ascertain the exact position and direction of the body and fundus of the organ—to bring these higher parts of the uterus, in most instances, within the reach of tactile examination, and to ascertain various important circumstances regarding the os, cavity, lining membrane, and walls of the viscus.

Having already exhausted my present limits by these preliminary observations, I must reserve the particular description of the instrument—the modes of introducing and using it,—and the different diagnostic indications which it is capable of fulfilling, for a second communication.

PART II.

PROPOSALS FOR THE IMPROVEMENT AND ELUCIDATION OF UTERINE DIAGNOSIS, BY MEANS OF A SOUND OR BOUGIE PASSED INTO THE UTERINE CAVITY.

In my former paper I took occasion to speak of the uncertainty of those symptoms of Uterine Disease that consist merely of derangements in the functions of the uterus itself, and of other contiguous and sympathising parts. Some facts were adduced to show, that, in uterine pathology, this uncertainty was so marked, that frequently the same affection of the organ was accompanied in different cases by different trains of functional symptoms; while it held equally true, that occasionally the same train of symptoms was found indiscriminately in connection with a number of morbid conditions of the uterus, that were essentially and practically dissimilar from one another both in their nature and treatment. From this frequent want of relation between morbid states of the uterus and their functional effects,—from finding identical lesions combined, in a variety of instances, with very diversified symptoms—and identical symptoms connected with very different lesions,—it followed, that in order to form a sure and perfect diagnosis in this class of affections, it is generally requisite to take into consideration the exact structural state of the uterus itself, and hence to institute, for the ascertainment of this point, a careful local examination of the organ. In urging the necessity of such a physical examination of the uterus in uterine diseases, I endeavoured only to claim for that organ a means of diagnosis, which, when practicable, is regarded as indispensable in the case of every other part of the system. In discriminating from each other, for example, the various kinds of morbid affections of the eye, no medical man would trust merely to the knowledge that he might acquire regarding the derangements of vision that might be present, the degree and character of the local and sympathetic pains, the quality and nature of the lachrymal and conjunctival secretions, the accompanying state of the system in general, &c.,—he would farther, in order to arrive at such an accurate diagnosis as would enable him to institute a rational course of treatment, examine as thoroughly as possible the local structural condition of the organ itself, as the only means of determining in what individual texture or textures,

whether the conjunctiva, cornea, lens, &c., the disease was specially localised, and what the precise nature of the morbid action really was in the texture that was affected. In the same way, in a case of excessive morbid irritation of the urinary passages, no surgeon would venture to decide precisely what the extent, seat, and nature of the affection was,—and whether renal, vesical, or urethral,—until he had made a strict local or physical examination of the urinary organs themselves. He might, by the kind of functional derangements present, be led to suppose that the morbid irritation was connected with a stone in the bladder, or an enlargement of the prostate, or a stricture of the urethra, &c.; but he could never be perfectly certain that one or other of these was the cause, until he had instituted, with the finger, sound, &c., a local examination of the parts implicated. It is exactly the same with uterine diseases. The external symptoms may show the presence of disease in the uterine organs, and occasionally may be such as to lead us to adopt some opinion as to its nature; but we can never, in any case of the slightest doubt, be certain of its exact character and extent, to such a degree as to serve for guides to our diagnosis, prognosis, and treatment, without we have the aid of the knowledge of the local structural state of the viscus itself.

A portion of my former communication was further taken up in showing, that the methods of uterine diagnosis as hitherto practised, (whether by touch, or the speculum, or both), were, except where the patient was of a spare and relaxed form, calculated principally or only to distinguish the various morbid states of the cervix uteri. Lastly, I ventured to suggest, as an addition to our other means of uterine diagnosis, that the higher and more interior parts of the uterus should be examined by a Sound or Bougie introduced into the uterine cavity, and stated that various points of great importance, and otherwise unascertainable, could be made out by its assistance.

In the present chapter I intend briefly to state the kind of instrument I have used, and the modes of introducing and manipulating it, with some of the points of information which we can obtain through its employment.

DESCRIPTION OF THE UTERINE SOUND.

I have already stated, that the instrument which I employ is somewhat similar to a small male catheter. It is, moreover, provided, like the common male sound, with a flat handle, to facilitate its manipulation, and terminates at its other extremity in a rounded knob or bulb, to prevent injury to the uterine textures. The intervening stem tapers gradually from the handle to the knob, the thickest part being nearly $\frac{1}{5}$ th of an inch in diameter, (equal to the size of a catheter No. 8,) and the thinnest part

about $\frac{1}{10}$ th of an inch, (or equal to a catheter No. 3.) The greater thickness of the attached extremity is necessary to give that portion of the instrument the requisite degree of strength and resistance; it is more slender towards its other extremity, to allow of its easily entering into, and being moved in the orifice and canal of the uterus. The terminating bulb is about $\frac{1}{8}$ th of an inch in diameter. The stem is about nine inches in length, and graduated so as to render its employment, and some of its indications with regard to the measurement of the uterus, more precise. Different modes may be had recourse to in marking it, but the marks, whatever they may be, must be such that they can be easily felt with the finger while the instrument is within the vagina. For this purpose they must be placed on the convex or posterior surface of the instrument, the surface, namely, with which the directing finger is in contact. The mode of graduation adopted in the instrument I have myself used, and which is figured in the plate,¹ is as follows. At $2\frac{1}{2}$ inches from the extremities of the instrument, (this measurement being the usual length of the uterine cavity,) there is placed a slight elevation or knob, which, in the employment of the Bougie, at once serves to show that it is introduced to the full extent into the interior of the organ, and at the same time forms a fixed or standard point from which the instrument may be farther graduated towards either of its two extremities. This farther graduation is marked by shallow grooves, which may be placed at the distance of either half an inch or an inch from each other, and, by their assistance, it becomes an easy matter to measure the exact length of the uterine cavity, when either it is diminished, or, as much more frequently happens, when it is prolonged to different degrees beyond its usual dimensions. The alternate groove may be double, to facilitate the measurement by the finger. The form of curvature at the extremity of the instrument is nearly that of a common catheter, and like it, begins about three or four inches from its point; but the degree and extent of this curvature require to be varied according to the necessities of individual cases, and according to the indications which it is wished to bring out. Hence the stem of the Bougie requires to be formed of a metal that admits of being pretty freely and frequently bent without the risk of fracture, and at the same time is capable of adequately maintaining any form that may be temporarily given to it. These objects are fully attained when the stem is made of solid silver, but probably some composition of the inferior metals may also be found to have the necessary combination of pliability and strength. The handle of the Bougie is made of wood or ivory, is about three inches long, three-fourths of an inch at its

¹ For a drawing of the instrument, see plate in Part III.

broadest part, and rather more than a quarter of an inch in thickness. The posterior surface of it is smooth, whilst its anterior surface, or that corresponding to the concave aspect of the Bougie, is roughened, in order to make the operator constantly aware of the direction of the point of the instrument when it is hid in the uterine cavity,—a circumstance which we shall afterwards see to be of great importance in reference to some of its diagnostic uses.

Mode of Introduction.—In introducing the Bougie or Sound into the uterine cavity, the patient may be placed either on her back or left side. If on her back, the fore-finger of the right hand is introduced into the vagina, and its extremity brought in contact with the indentation formed in the cervix uteri by the os tinæ, so as to act as a guide to the point of the instrument. The instrument itself is held in the left hand, and its point slipped along the palmar surface of the finger in the vagina, and directed by it into the uterine orifice. If the patient is placed on her side, she must lie with her body directly across the bed,—a position which facilitates greatly the manipulations required both for common tactile examination, and for examination by the Sound and Speculum. In this case, the fore-finger of the left hand is used as a guide to the os uteri, and the instrument is held in and directed by the right. In some instances where the parts are very lax, and the cervix uteri in any way displaced, the introduction of the Bougie is facilitated by passing both the fore and middle fingers into the vagina, fixing the cervix with them in the axis of the passages, and gliding the instrument along the groove between the two up to the os. In whichever of these ways the Sound is guided up to and passed within the os uteri, it generally afterwards glides easily, under a slight propulsive force, along the canal of the cervix and body, till (as shown by the elevated mark already alluded to as placed on the stem,) its extremity has passed onward to the fundus of the organ. Sometimes the extremity of the instrument is slightly obstructed about an inch or less within the os tinæ, by the natural contraction existing there between the cavity of the cervix and cavity of the body. This obstacle is easily overcome by a little additional impulse, or, if that fail, by slightly retracting and altering the direction of the point of the Sound. The direction which the instrument should naturally follow in passing along the uterine canal, must always be held in view. In the normal condition of the parts, the uterus and vagina meet at a considerable angle, the former passing upwards and at the same time considerably forwards, and varying somewhat its inclination with the varying degrees of distension of the bladder and rectum. In using the Bougie, therefore, supposing the organ to be in its

natural position, its concavity should be directed forwards towards the walls of the abdomen; or, in other words, it should be passed in the same direction as in most other manipulations in this part of the body, namely, in the line of the axis of the brim of the pelvis.

The degree of uneasiness felt by the patient during the passage of the instrument, is in general very trifling, and not more, if so much as is felt on passing the catheter along the urethra of the female, and certainly not by any means nearly so great as in using the Sound or Bougie in the male. In a few cases, I have seen it, like the passing of the sound in the male, produce a feeling of sickness and nausea. In the healthy state, however, of the organ, the lining membrane of the uterus does not in fact appear to be more sensitive than that of the vagina, so that the existence of any true and actual pain in making the examination with the Bougie, is to be considered so far anormal, that it is generally, as we shall afterwards see, indicative of the existence of some morbid state or other of the part or parts with which the extremity of the instrument is at the time in contact.

In the average run of cases, the introduction of the Sound into the uterine cavity, is probably not more difficult to accomplish than the introduction of the catheter into the bladder of the female. The os uteri is, in fact, usually much more easily and certainly detected by the finger, than the orifice of the urethra; and generally the one and the other instrument passes readily along its appropriate canal after it has once entered it. If it is otherwise, the very difficulty may be in itself important, as marking the existence of some anormal and probably diseased state. It is almost unnecessary to add, that the power of passing either instrument with perfect facility and certainty is only to be gained by a little perseverance in the practical employment of them.

The manner in which the instrument should be manipulated, after it is fully introduced into the uterine cavity, varies according to the object or objects which we wish to ascertain. The mode of using it with these views, will be best explained, by now pointing out individually, and at some length, the different diagnostic indications which it is capable of fulfilling.

USES OF THE UTERINE SOUND.

- I. *The Sound increases to a great degree our power of making a perfect and precise tactile examination of the Fundus, Body, and Cervix of the Uterus.*

I have already stated, that the *body* and *fundus* of the uterus are so deeply included in the cavity of the pelvis, and at the same time are generally so mobile under the pressure of the fingers,

whether applied to the organ from above or below, that it is difficult to ascertain any thing precise with regard to the condition of these parts, either by a common vaginal, or by a hypogastric examination.

The obstacles which thus so effectually oppose an accurate and complete tactile investigation of the surfaces and walls of the body and fundus of the uterus, may be in most cases, in a great measure, overcome by the aid of the Uterine Sound, if we employ it for the double purpose—*first*, Of giving sufficient *resistance* to the organ for its exploration by the fingers; and, *secondly*, Of altering the *position* of its parts so as to bring them each successively within the reach of tactile examination.

When the pliable and mobile uterus is held steady by the sound being placed in its cavity, and the central axis of the organ is for the time being, thus rendered, as it were, *firm* and *solid*,—the examination of its external surface, and of its walls, becomes a matter of far more certainty and accuracy than if we had the organ indefinitely yielding and receding before each slight touch of the fingers.

But besides thus rendering the organ fixed and resistant for our examination, the Uterine Sound will, as a diagnostic means, be found of still greater use and importance, by the control which its presence in the uterine cavity gives us over the *position* of the whole organ, and by its enabling us to alter at will the situation of the viscus to such a degree, that we can in succession bring within the range of a tactile investigation, different parts of its external surface and parietes, that are generally considered to be entirely beyond our reach. In reference to this remark it must be specially kept in mind, that in the healthy state the uterus is so loosely fixed in its situation in the pelvic cavity, that its position is capable of being changed to a very considerable extent, without incommodity or injury, by such exterior influences as may naturally or accidentally act upon it. Its position is so far constantly changed by the varying states of distension of the bladder and rectum. Under voluntary efforts of straining, it can in general be readily pushed down half an inch or an inch in the cavity of the vagina. It may be drawn down by instruments till the cervix reach the external parts themselves, or even protrude beyond them—a circumstance which facilitates immensely the operation of excision of this part of the organ. In consequence of the same anatomical peculiarity, we are able, through the use of the Uterine Bougie, to move the organ upwards, forwards, &c., to such degrees as are requisite for a complete hypogastric examination, without in general causing any marked inconvenience or pain to the patient.¹

¹ In corroboration of the statements in the text with regard to the natural *mobility* of the uterus, I would beg to fortify the remarks I have there made, by quot-

If, after the Bougie is introduced into the uterine cavity, we carry the handle backwards towards the perineum, the upper extremity of the instrument,—and consequently the fundus uteri placed upon that extremity,—will be proportionally moved forwards into the hypogastric region. One hand placed above the pubes will now feel the fundus uteri with the central and thinnest part only of the abdominal parietes intervening between the fingers and the surface of the uterus. Provided the woman be not of a full habit, and the abdominal muscles sufficiently relaxed by position, we can now pretty accurately examine with the hand placed on the hypogastric region, the state of the uterus as it is held forwards on the end of the Bougie, and we may always make ourselves still more certain of its condition by retracting and otherwise moving the handle of the instrument so as to bring the different parts of the superior, and anterior surfaces of the uterine tumour under the touch of the fingers. By a slight turn of the instrument to either side, the lateral surfaces of the upper part of the viscus may, in the same way, be brought under our tactile examination; and in spare subjects, I have occasionally found it possible, when the fundus was pushed against the abdominal parietes, to extend the manual examination to some distance along the posterior wall of the organ.

In those cases where this cannot be effected, the Sound still enables us to make a more perfect tactile examination of this—the posterior, part of the uterus, than we could otherwise effect, by giving us the power of temporarily depressing and reflecting its posterior wall, so that it may be felt by a rectal examination. The vaginal examination of the lower part of its anterior surface

ing upon the subject the opinions of two of the latest authors who have adverted to this particular point—Cruveilhier and Lisfranc. When speaking of the uterus in his excellent *System of Descriptive Anatomy*, Cruveilhier observes, “The looseness and extensibility of its connections, enable it to float, as it were, in the cavity of the pelvis, and to be moved to a greater or less extent. The facility with which it can be drawn towards the vulva in certain surgical operations, and its displacement during pregnancy, when it rises into the abdomen, are proofs of its great mobility.”—Vol. i. p. 618 of Dr Madden’s Translation. Lisfranc’s observations are still stronger. “There is,” he remarks, “a physiological fact of importance, but little known, and which hitherto has scarcely been alluded to by any writer. The uterus in the normal condition, and even when affected with engorgement, has a truly extraordinary mobility. To prove this, a very simple experiment will suffice. Let a speculum be introduced as high up the vagina as possible, so as to embrace the cervix uteri within its upper extremity; then bid the patient bear down as if at stool; and you will perceive that as the instrument descends, the uterus follows it to the extent of one, or even of two inches; an immense advantage when the surgeon wishes to bring down the uterus to near the vulva. In cases requiring operation about the cervix, all that the surgeon has to do is, to lay hold of the os uteri with a hook, and draw it gently down, until it comes fairly within sight; this may be effected without difficulty, and with very little inconvenience to the patient.”—Translated from the second volume of the *Clinique de la Pitié*, into the *Medico-Chirurgical Review* for April 1843, p. 360.

may be in general rendered more complete, by a similar aid, from the instrument.

In these different steps of examination, the degree and accuracy of the information obtained is varied in different individuals by the differences which exist in the thickness of the tissues placed between the uterine surface and the fingers; but in most instances the presence of any marked irregularity in the uterine structures—such as the presence of one or more small fibrous tumours,—their hypertrophic thickness, &c., may be readily made out—and, under still more favourable circumstances, the exact physical conditions of the organ in relation to its volume and dimensions, the morbid tenderness of individual parts of it, &c., may be precisely determined.

When we employ the Sound for the purposes alluded to in the preceding sentences, namely, for enabling us to make hypogastric examinations of the fundus and body of the uterus, the instrument, before its introduction, should have its extremity bent upon its stem at as nearly a right angle as the conformation of the genital canals admit, and, after being introduced, its handle should be well retracted towards the perineum. By attending to these circumstances, the fundus and body of the uterus will be more easily and fully turned forwards, and our examination of them very much facilitated. The same object will also be much promoted by retaining the directing finger at the cervix during the course of the examination, both to steady the instrument and to serve as a fulcrum to it. In that case the handle may be retracted or pushed backwards to any required degree by the forearm, while the other hand is employed in the hypogastric examination.

The preceding remarks apply to the examination of the fundus, and body of the uterus, parts which—unless when much enlarged, or the patient very thin—are generally looked upon as beyond reach of any physical diagnosis.

The physical states and relations of the *cervix uteri* are generally ascertainable by the finger alone. Still, in various morbid conditions of the cervix, our tactile examination of the organ may be much promoted by the assistance of the Bougie introduced into the uterine cavity. For instance, in chronic enlargement, cauliflower excrescence, and other organic diseases of that part, it is sometimes a matter of moment, both as regards our prognosis and our treatment, to ascertain if the existing diseased state stretches upwards so far as to involve or not the lower portion of the body of the uterus. In several such cases, I have found much assistance in determining this point by gently depressing the uterus by the Bougie introduced into it, and having the power thus of examining the organ, immediately above

the cervix, by compressing the structures of that part between a finger or two in the vagina, and the resistant Sound placed in the uterine cavity, and consequently in the very axis of the viscus. In this way, each point in the circumference of this portion of the organ may be successively examined.

These observations apply generally to such indications as can be made out through the use of the Bougie, when the uterus still retains that freedom of motion which we have seen it to possess, when it is itself in a healthy condition, and when there are no obstructions or impediments to its mobility in the surrounding parts. But there are cases where, from the organ having become more or less fixed and immobile, no advantage can be taken of those facilities which the power of partially displacing it in general allows us. In these instances, the very circumstance, however, of the mobility of the organ being lost, and still more the degree and extent of its immobility, often materially assists in pointing out the true nature of the affection that is present. Thus in *scirrhus* of the cervix, the early immobility of that part, in consequence of the morbid degeneration invading the contiguous tissues from almost the very commencement of the disease, is often one of the first and best characteristics of that dreaded malady. In this instance, the fixed state of the cervix of the organ is detected by the direct application of the finger. In other states of disease, the cervix remaining comparatively free and unaffected, the body and fundus may be immobile from various pathological causes, as from morbid adhesions, the consequence of inflammation of its peritoneal surface, from the pressure of tumours or abscesses, &c. Or, again, both cervix and fundus may be immobile at the same time, from general carcinoma of the organ, &c. In all these cases the immobility of the *body* and *fundus*, its degree, extent, and seat, can only be discovered by the Bougie; and its use, along with other considerations, may further lead us to detect the special pathological state that may be the cause of the morbid attachment or fixture of these parts of the organ.

II.—*The previous introduction of the Sound facilitates and simplifies the subsequent Visual examination of the Cervix Uteri with the Speculum.*

In employing the *speculum uteri*, the principal obstacle which we have to contend with, is the impossibility of always catching easily and accurately the os and cervix uteri in the upper or internal extremity of the instrument, so that these parts may be brought at once and completely within the range of sight. Indeed the search after the cervix uteri, when it is not at first caught in the open end of the speculum, is sometimes so painful

to the patient, and this part of the manipulation is occasionally so difficult to the operator, that every one who has made much use of the speculum will, I believe, be ready to confess that in some cases where the uterus is situated obliquely, or where the cervix is high and displaced, the object is almost impossible of attainment.¹ The previous introduction, and use of the uterine Sound, offers a simple and certain means, both of overcoming the difficulty in question, and of facilitating the employment of the speculum in our ordinary cases of examination with that instrument. After making such tactile examination as may be required with the Sound, leave it in the uterine cavity, and using it as a general guide, slip the uterine extremity of the speculum, whether tubular or bladed, over its handle and along its stem, till the instrument be fully introduced. The upper or uterine extremity of the speculum is thus guided with almost unerring certainty along the stem of the sound, till the cervix uteri is touched and included in its opening. Further, if we still keep the sound in the uterus, we have in it a means of turning the cervix to one or other side at will, so as to give ourselves a complete view of the mucous membrane covering the whole vaginal surface of this part of the organ. This last step in the examination is much facilitated by first drawing aside the stem of the bougie into the cleft between the two blades of the speculum—provided we are using a double bladed instrument.

In making these remarks, I presuppose that the patient, during the employment of the Sound and Speculum, is placed upon the left side in bed, in the position already pointed out as most favourable for making a common tactile examination. When occupying this position, with, as previously recommended, the body laid across the bed, the Speculum can be employed with perfect ease and success, and, at the same time, without any of that revolting exposure of the person of the patient, which is unavoidable when she is turned, as is so commonly practised, upon her back during this operation. The instrument can be introduced readily without the assistance of sight, and if the bed and body clothes be placed with a little care in contact with the surface of the patient, and the latter be closely arranged around the tube of the instrument, the mouth of the speculum is the only part which actually requires to be uncovered in order to enable us to examine the cervix uteri and canal of the vagina, and there ascertain those changes of colour, superficial alterations of structure, &c., that the speculum is occa-

¹ Thus, in their excellent Treatise on Diseases of the Uterus, Boivin and Duges state that, "The cervix uteri is sometimes so inclined backward that the speculum cannot show it by any movement." *Heming's Translation*, p. 33. See also Lisfranc's Lectures as reported by Pauly (*Maladies de l'Uterus d'après les Leçons Cliniques de M. Lisfranc*. Paris, 1836), pp. 59, 60; and Téallier (*Du Cancer de la Matrice*), pp. 70, 71, &c.

sionally of so great service in divulging, and by which we may have an opportunity, in doubtful instances, of either confirming or correcting the previous evidence afforded by the sense of touch.

III.—*By the use of the Uterine Sound we may, in many instances of Pelvic and Hypogastric or Abdominal Tumours, ascertain the connection or non-connection of these Tumours with the Uterus.*

We have already seen the advantages of having the uterus fixed upon the Bougie in facilitating the tactile examination of the outer surface of the organ. This use of the Sound is of still greater importance, when a chronic, pelvic, or hypogastric tumour is present, and we wish to ascertain whether this additional structure has its origin in, or any connection with, the tissues of the uterus, or is attached to some of the neighbouring parts or organs. The power of making such a distinction leads, in some instances, to practical distinctions in the treatment, and in almost all cases to differences with regard to our opinion of the future progress of the disease. The prognosis, for example, is very different in ovarian dropsy, and in enlargement of the uterus from the presence of a large mass of fibrous tumours in its walls. We have found, however, no mistake to be more common in practice, than to suppose a tumour in the hypogastric or iliac region to be an enlarged and dropsical ovary, when it actually consisted of the other much less formidable disease of a great mass of fibrous tumours in the uterine structures. When these fibrous tumours “attain (to quote the words of Dr Lee) a large size, and come to occupy a great part of the abdominal cavity, they produce all the injurious consequences of enlarged ovaria, from which indeed during life, they are distinguished with the greatest difficulty.” (*Cyclopædia of Medicine*, vol. iv. p. 388.) “It is often (says Dr Ashwell) exceedingly difficult where a growth, occupying the abdominal cavity, is large, filling perhaps its greater portion, to determine whether the uterus or ovary, or both, may not be diseased.” (*Practical Treatise on the Diseases peculiar to Women*, Part ii. p. 291.) This difficulty is, in some cases, more or less removed by the evidence afforded by the use of the Uterine Sound.

When the tumour which is present is uterine, and consists of either some general or partial enlargement of that organ, we have usually been able to gain satisfactory evidence of the fact by the Bougie, when passed into the uterine cavity, entering, as it were, more or less directly into the very structure of the morbid mass, and by the tumour and instrument afterwards reciprocally moving in exact correspondence with all the possible motions imparted respectively to each of them.

In other instances, where the tumour is *not* uterine, we have

repeatedly made ourselves and others certain of the fact, by first introducing the Bougie, and so far giving us at once a knowledge of the exact position of the uterus, and a control over its movements, and then proceeding in one of three ways:—1. The uterus may be retained in its situation with the Bougie, and then, by the assistance of the hand above the pubis, or by some fingers in the vagina, the tumour, if unattached to the uterine tissues, may be moved away from the fixed uterus:—2. The tumour being left in its situation, it may be possible to move away the uterus from it to such a degree as to show them to be unconnected:—or, 3. Instead of keeping the uterus fixed and moving the tumour,—or fixing the tumour and moving the uterus, both may be moved simultaneously, the uterus by the Bougie, and the tumour by the hand or fingers, to opposite sides of the pelvis, to such an extent as to give still more conclusive evidence of the same fact. In a case, for example, which I saw during the last winter, there were two distinct firm defined tumours to be felt at the brim of the pelvis when the hand was placed above the pubis. The smaller of these tumours was placed to the left, and somewhat anterior to the other. The two tumours lay so close as to seem to be connected with each other, and this, with their semiglobular form, impressed the physician who had charge of the case with the belief, that his patient had one of those masses of roundish fibrous growths affixed to the uterine walls, that we have already spoken of as not unfrequently met with in this part of the body. The hypogastric examination of the swelling induced me at first to adopt the same opinion, but the employment of the Bougie readily showed us to be both in error. The instrument, when introduced through the os into the uterine cavity, passed directly upwards to the top of that tumour which lay towards the left side, and the apex of the Sound could be felt through the intervening tissues, at once demonstrating that this apparent tumour was formed by the fundus of the somewhat enlarged and displaced uterus. Retaining the instrument in this position, the uterus was next moved by means of the Bougie still further to the left, whilst the other tumour was at the same time pushed still farther to the right or opposite side, by the pressure of the hand, with such ease and to such an extent, as to prove that it had no immediate organic connection with the uterus. The further examination of the tumour on the right side—its rounded form and other physical characters—its position behind the broad ligament, &c., showed it to be ovarian. Without, however, the aid of the Bougie, the two hypogastric swellings in this case would assuredly have passed for uterine fibrous tumours, instead of the one being formed by the fundus of the uterus, and the other by an enlarged ovary.

The rules of diagnosis which I have been stating, evidently apply only to those cases in which the uterus and pelvic or hypo-

gastric tumour are neither organically adherent to each other, nor so closely wedged together as to render them mutually immoveable. But it often happens, that, in consequence of the existence of one or more of these last mentioned conditions, none of the tests that I have just now spoken of can be applied, and in such instances the Bougie affords no very affirmative evidence. Still, however, the knowledge which we can gain by it, and by it alone, of the state of the uterine cavity, of the increased or diminished length of that cavity, and especially of its relative *situation* and direction in regard to the existing morbid mass, are calculated in some of these more difficult and complicated instances to afford no small degree of assistance in the diagnosis.

In one common set of cases, the knowledge of the exact situation of the uterine cavity, and hence of the uterus itself, in relation to the tumour that is present, even when both were immobile, has in repeated instances appeared to me especially important. The ovary normally lies behind the uterus, being attached to the *posterior* surface of the broad ligament. If, therefore, in a case of chronic tumour situated in the pelvis, the Sound shows the tumour to lie on the *anterior* surface of the uterus; or, in other words, if the uterine cavity runs up the posterior surface of the morbid mass, the disease may be considered as certainly not ovarian, and the further difficulties of the diagnosis will thus be so far very much simplified by way of exclusion. This remark particularly applies to those cases in which the tumour, of whatever nature it may be, is still not so large as to have passed out of the pelvic cavity and become abdominal.

I have found, however, advantage from the negative information given in other ways by the Bougie, even when the tumour was abdominal in its seat. An example will best illustrate my meaning. In a case sent to Edinburgh a few months ago, for the purpose of having some opinion given in regard to its nature, an immense abdominal swelling that was present, and which had been supposed by some medical gentlemen who had seen the patient to be ovarian, was shown not to be so, by sufficient evidence of the following nature. The uterus was displaced obliquely backwards, and the fundus of the bladder was displaced towards the right iliac region by the abdominal enlargement—circumstances which were easily ascertained by introducing the uterine sound into the cavities of both of these organs. Further, the uterus, though displaced, was quite mobile; and when its fundus was turned by the Bougie towards the site of either ovary, and the abdominal tumour lifted at the same time as high as possible towards the epigastrium, no obstruction was met with, nor was this great change upwards in the direction of the tumour found to produce *any dragging effects whatever* upon the uterus as held by the Bougie, or upon its connections,—effects

which, (unless under the improbable supposition of a pedicle several inches long,) would have inevitably occurred if the diseased mass had originated in or was connected with the ovaries or uterine appendages. So far, the evidence was negative, but still, nevertheless, important. I may add, that other characters of a more positive nature—the history, particular form, and consistence of the tumour—its position in front of the intestines as ascertained by percussion, &c. &c.—seemed to show it (seeing that it was not ovarian) to be in all probability one of those hydatigenous tumours that sometimes form in the tissue of the omentum, and whose physical symptoms during life in many respects correspond with those of ovarian dropsy.

In a case, in which a very large hard and solid tumour was situated in the mesial line of the abdomen, and had been growing for years, the aid of the Uterine Bougie assisted us greatly in making a diagnosis of its pathological seat and character, by a kind of evidence which was exactly the reverse of that stated in the preceding instance. In the case we speak of, the os uteri was in its usual situation in the pelvis; the Bougie, however, after passing through it, glided onwards obliquely forwards, and towards the left, showing the body of the uterus to be displaced in that direction. Farther, it was ascertained, by moving the Bougie in the uterine cavity, that the progress of the uterus towards the right side was entirely prevented by the presence of the opposing morbid mass, whilst it could be moved to the left side to a slight extent, but still so much so as to show that its surface was not *immediately* adherent to the tumour. Holding the Bougie in the uterus, with a finger in contact with the cervix uteri, the body of the growth was next strongly pushed both upwards and to the right, with the other hand placed upon the lower part of the abdomen. When so moved, the tumour distinctly pulled upwards along with it the uterine Bougie, and consequently, the uterus itself. The whole examination by the Bougie thus showed;—that, *first*, The tumour was not a fibrous growth developed in the uterine structure, or intimately attached to its exterior surface, because the body of the uterus, though displaced by the presence of the growth, was still moveable to a certain degree independently of it; *secondly*, It was probably an enlarged ovary, or tumour connected with the ovary or uterine appendages, because when moved upwards or to the right, it *dragged* the uterus along with it; *thirdly*, Though mesial in its position, it was attached to the side of the right ovary, or to the posterior surface of the right broad ligament, because the body and fundus of the uterus were displaced forwards and towards the left, and had some remaining mobility in that direction, but could not be moved by the Bougie in any degree backwards or towards the right side, in conse-

quence of the presence of the opposing mass of the tumour. These circumstances in the physical diagnosis of the tumour, as ascertained by the Bougie, were confirmed by the other symptoms of the case ; but these other symptoms would certainly, in consequence of the equivocal character and position of the tumour, have been in themselves insufficient to have fixed its true pathological seat and character.

In the preceding remarks, I have pointed out the uses of the Uterine Bougie, in so far as they aid our examination of the *exterior* of the uterus, or of the outer surface of the Fundus, Body, and Cervix, and enable us to distinguish between tumours of the uterus itself, and those situated in structures altogether external to it.

In continuing the subject in my next communication, I shall attempt to state the still more important uses to which the instrument can be put, in examining the *interior* of the organ, and the state of its walls, and in determining the presence of those common but hitherto little known forms of displacement that pass under the names of retroflexion, ante flexion, &c. I shall take the same opportunity of showing the circumstances which counter-indicate the use of the Sound, and the cautions required in its employment.

PART III.

ON THE MEASUREMENT OF THE CAVITY OF THE UTERUS AS A MEANS OF DIAGNOSIS IN SOME OF THE MORBID STATES OF THAT ORGAN.

No organ of the body is, in its normal and physiological state, more subject than the uterus to great and striking alterations of volume. Witness its rapid increase during pregnancy, and its still more rapid diminution in the puerperal female. In some of its anormal and pathological conditions, the same organ strongly displays the same tendency to enlarge in different directions and dimensions. "No tissue," observes Cruveilhier, "is more extensible, more malleable, (*plus extensible, plus malleable*), than the tissue of the uterus, when it has undergone the softening which constantly accompanies its hypertrophy. It becomes elongated and extended in all directions; and it is only when its distension is carried beyond measure, that upon its hypertrophy supervenes atrophy." (*Anatomie Pathologique*, livr. xiii.) Again, on the other hand, the cavity of the unimpregnated uterus is so small, and its canal of communication with the vagina is so narrow, that they are liable to be found more or less obliterated by mal-conformation or disease; while the uterine walls themselves are sometimes observed, by their partial displacement and inversion, to shorten, and even to efface the internal cavity of the viscus.

The changes in the capacity and dimensions of the uterus, which are thus so often produced by disease, have been long well known to the pathological anatomist. They have hitherto, however, in a great measure, escaped the observation of the medical practitioner, because, though frequently discovered by him upon the dead body, he possessed no certain means of detecting their presence during the lifetime of his patient. In the following communication, it is my purpose to show, that this blank in uterine pathology may be filled up, and that we can ascertain, by means of the Bougie, with sufficient facility and precision, upon the living subject, the varying sizes of the uterine cavity. And here, as in all other cases in which physical signs have enabled us to determine pathological lesions during life, we shall find that the knowledge of them may be rendered of the highest avail in diagnosis and practice.

With these views, we shall attempt to illustrate as our next proposition, with regard to the uses of the instrument which we are describing, that

IV.—*The Uterine Bougie is capable of affording valuable diagnostic information, by enabling us to measure the Length of the Uterine Cavity.*

The uterus varies in its dimensions, and consequently in its length, in different persons, independently both of pregnancy and disease. In the unimpregnated state, and in its normal and healthy condition, I have found the cavity of the organ to measure, on an average of a pretty extensive number of observations made both upon the living and dead body, about two inches and a half from the os to the fundus. The Bougie has, as already stated, an elevated mark upon its stem at this distance (two inches and a half) from its point, for the purpose of showing whether or not the instrument is completely introduced into the uterine cavity. The cavity is, in its normal varieties, more often above than below this standard. Further, the instrument, as previously mentioned in the description that has been given of it, (see Part II.) is so graduated by inch or half-inch marks upon its stem, as to indicate, when it is introduced up to the *fundus uteri*, the exact degree of elongation, or of shortening of the interior of the organ. In illustrating its utility in this respect, I propose to demonstrate its application to the discovery, *first*, Of some morbid states in which the uterine cavity is preternaturally increased; and, *secondly*, Of others in which it is preternaturally diminished in length. In the present communication, we shall limit our attention to the first of these divisions, or to

INSTANCES OF INCREASED LENGTH OF THE UTERINE CAVITY.

The cavity of the uterus may be found elongated under a variety of circumstances which we shall consider somewhat in detail.

1. *Morbid Permanence of the State of Puerperal Hypertrophy.*—This peculiar condition does not appear to have as yet attracted the attention of obstetric pathologists, as the cause of one of those forms of chronic hypogastric tumours that are occasionally met with during the first weeks and months after delivery. The want of any decisive means of recognising it has doubtlessly led to this omission. The notes of a case will show better than any comment the nature of the affection to which we allude, and the facility and certainty with which it may be recognised by means of the Uterine Bougie.

During the summer of 1842 I attended, along with Dr Abercrombie, a lady, who, after a premature confinement in the country, had suffered from a smart attack of puerperal fever. After so far recovering for a few weeks she was sent from a considerable distance into town, to be treated for what appeared to be a large tumour, stretching upwards from the pelvis into the right iliac region. The tumour had not been observed before delivery, and was somewhat painful to the touch. It seemed at first sight extremely doubtful whether the mass consisted of an inflamed uterine fibrous tumour, or enlarged ovary, or of one of those chronic purulent collections which are apt to form towards one or other iliac region in connection with puerperal fever or inflammation. The Sound, when introduced into the os uteri, passed easily and directly upwards for several inches to the superior end of the tumour, and its apex could be felt there by the hand placed externally. This at once showed the supposed diseased mass to consist of the enlarged uterus. Further examination proved that there was nothing strictly abnormal about the uterus except its great size. In fact, it was a case where the organ had apparently remained nearly undiminished after delivery, probably from the puerperal attack arresting the usual progress of its absorption and diminution. It decreased rapidly and fully under leeches and other local antiphlogistic treatment.¹

May not some of the instances of pelvic or hypogastric swellings after delivery, which have been recorded by Puzos and others² as lacteal collections (*depôts laiteux*) or inflammatory effusions, and that ultimately yielded without suppuration, be of the above nature? The lateral position of the swelling is, as shown by the preceding case, not a sufficient criterion.

In one of those cases of subacute inflammatory tumours that occasionally form in the pelvis of the puerperal female, and that lately came under our care, the information afforded by the Sound was perfectly the reverse of that obtained in the preceding instance, and yet still of considerable importance. I did not see

¹ Long after the above case and the observations preceding it were written, I met with the following passage in Dr Hooper's work, showing that the diseased state that I had recognised during life, was known to him as a *post-mortem* appearance:—"When a foetus has been recently expelled, it is, in some instances, a long time before the uterus returns to its original state; and it is larger and softer during the period. I have examined uteri four times their natural size from this cause, two months, and even more, after the foetus was expelled."—*Morbid Anatomy of the Human Uterus*, p. 5. Is this the disease alluded to in Kleinert's *Repertorium*, bd. ii. 1838, s. 51, as described by Kopp under the name of *Hysteranesis* in the first volume of his *Denkwürdigkeiten*, p. 235? I regret that I have no access to this work.

² See Levret's *l'Art des Accouchemens*, p. 168. *Des Engorgemens Laiteux dans le Bassin*, &c. Deleurye's *Traité des Accouchemens*, p. 509. *Des dépôts laiteux dans les ligamens larges*, &c. &c. In a MS. copy of William Hunter's *Lectures*, belonging to the College of Physicians, Edinburgh, among the remarks on puerperal diseases, is a short chapter on "the iliac abscess."

the patient till nearly two months after her confinement. She had not regained much strength, and there were symptoms present which indicated a degree of subacute inflammation in the region of the uterus. A rounded and circumscribed tumour could be readily felt rising from the pelvis to the height of an inch or two above the brim of the pelvis. Was this a swelling resulting from some limited inflammatory effusion among the pelvic viscera; was it the uterus itself, or some neighbouring organ, enlarged and diseased; or what was its nature? On passing the Bougie through the os uteri, which was a matter of some difficulty in consequence of its distance from the vulva, it slipped easily upwards to the top of the hypogastric swelling, and showed the apparent tumour to be the uterus itself, situated much higher, and more anteriorly than usual. It showed farther that the uterine cavity was of its usual length, and consequently that, though displaced, the organ was *not* enlarged. It was, however, found to be firmly fixed in its abnormal position by some morbid cause, which prevented its fundus and body from being moved by the bougie either backwards or laterally. On searching further into the nature of the morbid cause which could thus anomalously displace and fix the organ, I found a large swelling situated at the upper part of the vagina, and between the uterus and rectum. It pressed downwards upon the roof of the vagina and backwards upon the rectum, and pushed upwards the uterus in front. Its extent and situation in the pelvis were made out by a combined rectal and vaginal examination. Its nature was more obscure, and the feeling of fluctuation, if any, was very indistinct. In the presence of Mr Ziegler, Dr Keith, and Dr Murray, a very slender exploring needle was passed from the rectum through the dense walls of the tumour, in order to ascertain whether it contained fluid, and if so, the nature of that fluid. A drop or two of thin pus escaped along the tube of the instrument. This at once satisfied us of the nature of the tumour. I immediately made a larger perforation into it from the bowel with Pouteau's trocar. A quantity of pus escaped, and continued to do so for a considerable time. The local and general symptoms under which the patient was suffering speedily abated, and she has since entirely recovered her general health and strength. The catamenia have returned. The uterus, however, still remains preternaturally fixed and immobile.

In the case which I have just detailed, the results were to me the more gratifying, inasmuch as some months previously I had seen, in the Lying-in Hospital, an instance of the same disease in which the affection proved fatal from the collection of matter bursting into the general cavity of the peritonæum. On the *post-mortem* inspection of the body, it was evident that from the thinness of the partition intervening between the purulent collection

and the cavity of the rectum, the abscess would have soon burst into the bowel if it had not given way superiorly into the peritonœum itself; and it was equally evident that an artificial opening made from the rectum into the purulent sac before the period of its rupture, might have saved the life of the patient.

M. Martin of Montpellier, who has written one of the best memoirs extant upon this subject,¹ under the title of *Des dépôts des annexes de la Matrice qui surviennent à la suite des Couches*, recommends, in the treatment of the purulent collection, that, in order both to open it externally, and to produce previous adhesions of the containing sac to the abdominal parietes, caustic potass should be applied to that part of the hypogastrium which forms the most prominent point (*le point le plus saillant*) of the swelling. (*Mémoires de Médecine et de Chirurgie Pratique*, p. 312.) This rule of practice, which seems to have been very successful in Martin's own hands, would, if universally followed out as a mode of evacuating the collection, sometimes lead to an irreparable and fatal blunder. In the case that I have detailed, the most prominent hypogastric point of the swelling was, as we have seen, formed by the uterus itself, as demonstrated by the Bougie. The use of the instrument would easily guard against such a mistake as applying—as might have happened in such an instance—the caustic or knife over the uterus, instead of over the purulent cyst itself.

In these cases of subacute or chronic purulent collection in the pelvis after delivery, the pus seems to be in the first instance effused beneath the peritonœum of the uterine appendages, and between it and the pelvic fascia. The original inflammation appears to be seated in the structures intervening between these two membranes. I have seen several cases in the female of chronic "pelvic inflammatory tumours" of the same seat and nature, unconnected with the puerperal state, and where the fixed state of the body of the uterus, the surrounding tumefaction, and the apparent almost ebony induration produced in the roof of the vagina at one stage of the disease, by the tenseness and distension of the pelvic fascia, gave rise to the idea that the affection was organic and carcinomatous, and not simply inflammatory. I may

¹ See also among the more recent descriptions of the disease, the observations of Dance and Husson in Breschet's *Repertoire d'Anatomie*, tom. iv. p. 172, (8vo edit.); Meuiere in *Archives Génér. de Médecine*, tom. xvii. p. 529. Grisolle in *ib.*, tom. xlix. p. 37; Kyll in Rust's *Magazin für die Ges. Heilkunde*, bd. xli. s. 311; Imbert in his *Traité des Maladies des Femmes*, tom. i. p. 160; Dupuytren in his *Leçons Orales*, tom. iii. p. 347; Meissner in Kleinert's *Repertorium*, bd. vi. (1842) s. 38; Charlton in the *Edinburgh Monthly Journal*, for 1841, p. 329; Doherty in the *Dublin Journal* for 1842, p. 199. I observe that in the last or September number of the *Dublin Journal*, my friend Dr Churchill has published an excellent memoir on this affection, but does not seem to be aware that the disease had already attracted the attention of many modern writers.

revert to this subject in a future part. Already the present digression on it is much too long.

2. *Normal Elongation of the Puerperal Uterus as a Sign of Delivery.*—Immediately after delivery, the uterine cavity is in general from six to eight inches in length. I have seen it measure between eight and nine inches in three women, who each died within twenty-four hours after delivery, with the organ imperfectly contracted. In one of these cases death apparently resulted from the introduction of air into the venous circulation through the free openings of the uterine sinuses; the second sank after a twin labour and severe hæmorrhage; the third died about six hours after delivery, having laboured under convulsions and deep coma during the whole previous day; and in both these last cases extensive and well marked granular disease of the kidney was found on dissection.¹ In the course of the natural changes of the puerperal state, the uterus gradually diminishes and regains its natural size in the course of four or five weeks, and, in some, not till a longer period after parturition. In two cases which I have lately seen, where it was requisite for the purposes of criminal law to ascertain the existence of the signs of delivery, the uterine cavity was, about the seventh day after the accouchement, still between four and five inches in length. In a third case, in which the date of the parturition is still uncertain, two most intelligent medical men gave in a report, certifying the existence of all the ordinary signs of delivery upon the body of a woman nearly fifty years old, with the single but important exception, that no uterine tumour could be felt by them above the pubis, probably in consequence of the organ being so flaccid or so low in the pelvis, as not to be felt by the common hypogastric examination. Eight days subsequently, I saw the accused along with one of the medical reporters, and at that time found that the uterine cavity still measured fully four inches in length, and that the fundus of the organ could be

¹ The third case alluded to in the text, offered me the first opportunity of confirming, by inspection after death, an opinion that I had been led to adopt from the examination of the symptoms during life, and had publicly taught for the two last sessions, viz., that patients attacked with puerperal convulsions had almost invariably albuminous urine, and some accompanying, or rather preceding, dropsical complications, and hence probably granular renal disease. Pathologists are now well aware of the occasional great tendency to convulsions and other head symptoms in patients affected with Bright's disease, and of the influence which that affection has over the progress of both medical and surgical affections. The present occasion is not a proper field to discuss its bearings in relation to parturition and the puerperal state, or otherwise its importance might be easily illustrated. A very able and zealous investigator (Mr Lever of Guy's Hospital) has already so far entered on the inquiry, by pointing out that, (as in one of the cases adverted to in the text,) inertia of the uterus and hæmorrhage, are sometimes the accompaniments, if not the consequences, of an albuminous state of the urine, and granular disease of the kidney. (See *Guy's Hospital Reports*, vol. vii. (1842) p. 325.

pressed easily forwards by the end of the introduced Bougie, so as to make us both perfectly certain of the existence of enlarged uterine tumour. This completion of the evidence was the more satisfactory, as the person still pertinaciously denied the crime of concealment in connection with child-murder, on an accusation for which she was at the time incarcerated, and the proof, (independently of the facts ascertained by the medical witnesses,) was very vague and uncertain.

In this last case, the use of the Bougie proved the presence of the enlarged uterus, when, as long as a week previously, it could not be felt above the pubis by an abdominal examination carefully conducted in the ordinary mode. It showed the uterine tumour to exist when it could not be felt by the usual means of examination. In other instances of the same kind, it may prove useful in the converse way, by demonstrating the tumour that may be felt, not to be formed by the enlarged uterus. Dr Montgomery, in his essay *On the Signs of Delivery*, justly states, that "the chief points of attention ought to be the state of the *uterus*, of the external parts, and of the breasts." (P. 317.) But in regard to the first of these, as felt above the pubis, he properly remarks, "a tumour may be felt so situated, and yet may not be the uterus." (P. 307.) The introduction of the Bougie into the uterine cavity would at once decide this point.

In any doubtful case, the evidence derivable from the measurement of the uterus might be made the more complete by repeating it from time to time, so as to note the gradual diminution of the length of the organ, till it ultimately returned to its natural size.

This sign, like all the other proofs of delivery, can never be relied upon alone, but must always be taken in connection with the other data that are present. It may be considered, however, as an addition to their number, which is the more valuable in this respect, that it can be ascertained at a date later than most of them. To render its evidence still more certain and precise, it would be necessary to know the general rate of diminution in the length of the uterine cavity after delivery, and its variations. An extensive series of observations, both upon the living and dead subject after delivery, could alone fully determine these points. The examinations of puerperal uteri after death, which have been recorded by Ruysch, Roederer, Montgomery, &c., will aid in such an inquiry.¹

¹ I may add, that in one of the women above alluded to, and whom I saw in prison along with Dr Graham Weir, we detected another sign of delivery, not hitherto pointed out, as far as I know, by any medical jurist. All of them mention the value of the evidence afforded by the tactile examination of the os uteri. The *visual* examination of this part with the speculum afforded in the instances alluded to a still stronger proof. The swollen, ecchymosed, and gaping state of the labia and os uteri,

In cases of feigned delivery, the sign that we have pointed out from the measurement of the uterus, might be equally useful in demonstrating the organ to be of its normal length and dimensions.

3. *Increased Length in Metritic and Congestive Hypertrophy of the Body of the Uterus.*—When the body and fundus of the uterus are the seat of any continued morbid irritation, the walls of the organ become hypertrophied in the same manner, though by no means to the same degree, or with the same uniformity, as under the continued normal irritation of pregnancy. The most common pathological cause of uterine hypertrophy, when uncomplicated with organic disease, is chronic congestion or metritis. It happens in hypertrophy from this source, that, as in cases of eccentric hypertrophy of the heart, the cavity of the organ becomes in general enlarged, along with the enlarged state of the parietes. This enlargement of the cavity generally takes place in all directions, so that it is increased in its length, as well as in its other dimensions. The increase of length, or elongation of the uterine cavity, may be ascertained and measured by the Bougie. There are as yet few or no precise data which can be referred to to indicate the degree of hypertrophy, and consequent elongation in such cases. In an excellent specimen of simple hypertrophy of the uterus, contained in Dr William Hunter's museum, the length of the cavity of the organ, from the os to the fundus, is exactly three inches and one-fourth. It is set down in the catalogue, as a "Uterus slit open from before; it is the size of the impregnated uterus at two months; the woman, however, was not pregnant, but had the furor uterinus." (*Printed Catalogue*, p. 147, No. 97, s.) The hypertrophy and accompanying elongation may be occasionally greater. I have repeatedly found the uterine cavity measuring as much as three and a half inches. When speaking of hypertrophy as a result of chronic metritis, Boivin and Duges observe, that in this state "the uterus is often distended throughout, and its volume assumes the dimensions presented in the second month of pregnancy." And they add, "In some cases it enlarges so as to fill the hypogastrium, and reach the umbilicus."—(*Chapter on Chronic Metritis*, p. 352.) "With this state (of simple hypertrophy)," says Dr Hooper, "the whole of the uterus is of a preternatural size, more especially the body of the uterus, without any other morbid or unnatural appearance; and this increase of size is caused by an unusual formation of the healthy structure of the organ. With regard to the extent of this unnatural occurrence, I have found

presented such striking peculiarities as made it almost impossible to confound it with any other morbid condition of the parts, such as the inequalities, ulcers, &c. attendant on syphilis, and against whose similarity, as ascertained by touch, Gardien, (*Traité d'Accouchemens*, tom. i. p. 132,) so particularly guards us.

the uterus more than twice the usual size; and this may be considered as the mean, or most common size in hypertrophy; but it is sometimes much larger.”—*Morbid Anatomy of the Human Uterus*, p. 5.) “I have known (observes Dr Burns) the cervix thicker, the body evidently swollen, and, if not deluded, the fundus rising *above* the pubis, and yet the tumour disappear.” Dr Hamilton (*Pract. Observ.*, p. 65) says he has seen the “uterine tumour as large as the womb in the fifth month, and yet it was removed.” (Burn’s *Principles of Midwifery*, p. 122, 10th edit.)

We would qualify these remarks upon the increased ad-measurement of the uterus in congestive or inflammatory hypertrophy, by adding, that judging from our own experience of it, probably this mode of physical diagnosis will, in the morbid condition under consideration, be found of more use practically in showing us with sufficient precision the gradual diminution of the organ, and hence the rate of progress towards recovery under the treatment that we may be following, than in forming by itself, in the first instance, a perfect diagnostic criterion of the original existence of the disease. For we must hold in view, that the length of the cavity of the organ is, from natural conformation, liable in different persons to exceed the usual standard by a few lines, even when no disease is present; and in chronic hypertrophy the increase of the longitudinal dimensions of the uterus will not be to any very marked or notable extent, unless the affection has proceeded to a considerable degree. Besides, there may exist, (although we cannot call to our recollection any example of it), a form of metritic enlargement, in which, as sometimes occurs in the heart, the hypertrophy is concentric, and not excentric, (to borrow the cardiac nomenclature of Bertin), and where the length of the uterine cavity would consequently not be increased by the presence of the disease.

In employing the Bougie in the diagnosis of simple hypertrophy of the uterus, the instrument is of use in other respects than by merely enabling us to measure the length of the uterine cavity. It gives us at the same time the power of examining, in the mode that we have already shown, (see Part II.), much more accurately than we could otherwise do, the condition of the fundus and anterior and posterior walls of the uterus, through the abdominal parietes and rectum,—so that we can at the same time ascertain, that while the organ is increased in length, its external surface is quite regular, and presents none of the inequalities which indicate the existence of any more fixed or formidable organic change.

4. *Longitudinal Hypertrophy of the Uterus, and especially of the Cervix.*—In that form of simple or metritic hypertrophy which we have last described, the morbid enlargement of the organ

affects equally all its dimensions, and increases its breadth as well as its length. Occasionally, however, it happens, that in hypertrophy of the uterus, the increase in the dimensions of the organ is principally, or even entirely in its longitudinal direction, and that in consequence the uterine cavity becomes so elongated, as to afford us a much more decisive physical sign of its morbid state, when submitted to the measurement of the Uterine Sound. One of the most remarkable examples of this type of uterine hypertrophy hitherto placed on record, is that mentioned by Dr Kennedy, in an excellent paper¹ in the *Dublin Journal*, as having occurred in a case of extra-uterine gestation. The uterus was "developed in its length, with very little increase of breadth, to the extent of twelve inches." (P. 321.)

When this longitudinal hypertrophy takes place in the unimpregnated uterus, it almost always results from morbid elongation of the cervix. The body and lips of the organ are natural in size and dimensions; but the intervening part, or cervix, appears as if its tissues had become ductile, and been extended and drawn out to a greater or less degree. The elongated cervix may either retain its normal diameter, or, as more rarely happens, it is attenuated in thickness nearly in proportion to its increase in length.

Two different varieties of the morbid hypertrophy that we are considering seem to occur, and have not been sufficiently distinguished by authors. In one, the elongated portion of cervix is placed altogether *above* the reflection of the roof of the vagina; in the other, the hypertrophy is situated *below* that reflection, or affects only the vaginal cervix, as it has been termed. In the former variety, the altered uterus is reduced in form to the shape and type of the organ in infancy. We have seen this variety in some cases of complete procidentia of the uterus,² and found the uterine canal, as measured by the Bougie, to be stretched out to four and five inches in length. Mr Heming supposes that this form of cervical elongation is most apt to take place in connection with prolapsus of the uterus, "complicated with hernia at its posterior part," whilst the cervix remains unchanged in prolapsus "complicated with hernia at its anterior part." (*Med. and Phys. Journal*, vol. lxxviii. p. 107.) I have examined one case where the reverse holds true; the os uteri is prolapsed an inch or two beyond the vulva, and the cervix much elongated; but the posterior wall of the vagina remains *in situ*, forming a deep reflection behind the protruding tumour; and the anterior

¹ "On Hypertrophy of the Os Uteri." *Dublin Journal of Medical Science*, vol. xiv.

² See good illustrative sketches of this form of the neck of the uterus in the cases of prolapsus uteri figured in Cloquet's *Pathologie Chirurgicale*, (1831), pl. viii. fig. 3, and Froriep's *Chirurgische Kupfer tafeln*, t. 417, fig. 1 and 4.

wall of it with the bladder forms part of the external swelling. I may add that this variety of hypertrophy is met with also in instances in which the elongation of the body of the organ takes place in connection with the presence of fibrous or other tumours, when they happen to drag and raise upwards into the abdomen the fundus uteri, while the cervix remains fixed. Cruveilhier has represented an example of this complication, in which the canal of the cervix alone is stretched out to the length of five or six inches. (*Anat. Path.*, livrais. xiii. pl. 2.)

When the portion of cervix, which is below the vaginal reflection, is hypertrophied, the elongated structure projects downwards from the vaginal roof, like the cylindroid finger of a glove or a cow-teat. I have had occasion to excise one, in consequence of the constant discomfort which it produced. In another case of this kind, in which the patient has suffered often from recurrent attacks of severe uterine irritation, and has the os uteri almost projecting through the vulva, the neck of the organ is about two inches in length, and the body of the uterus is, as I have ascertained by the Sound, acutely bent or retroflected backwards and to the right; and it has its fundus firmly adhering in this anormal position to the pelvic peritonæum covering a firm solid tumour lodged behind the rectum, and filling up the upper part of the hollow of the sacrum. The shape and consistence of the tumour at first gave me the idea, that it was one of those osteosarcomatous masses that are sometimes seen in this locality; but the use of the exploring needle showed that the induration was not from any bony deposit. When of still greater size than in these instances, the hypertrophied cervix has prolapsed externally, and by its shape and configuration has been mistaken for the male penis. Some of the cases of spurious hermaphroditism in the human female, as those described by Saviard, Valentin, and Home, appear to have been merely examples of this disease. (See Dr Todd's *Cyclopedia of Anatomy*, vol. i. p. 690.) Its presence generally prevents impregnation; and in fact the tapering, conical form of the cervix uteri, which is so commonly found in women long married without becoming mothers, is a minor degree of this same diseased state. Ollivier, Lisfranc, and others, have mentioned the frequent connection of this state with sterility; and I have repeatedly had occasion to verify it. In a case that came under the care of Dupuytren, the elongated cervix was reduced to its natural length by the knife. The patient had been previously eight years married, and asked medical advice on account of her want of family. Two months after the operation she became pregnant. (See Dumont's *Thèse sur l'Agénésie, l'Impuissance, et la Dysgénésie*. Paris 1830. No. 2231; and *Archives Gén. de Médecine*, t. xxv. p. 266.)

The morbid elongation of the cervix uteri is spoken of by Roux

as “a pretty frequent condition, (*état assez fréquent*) and one that has been hitherto mistaken for procidentia or prolapsus by the greater number of practitioners.” (See his Preface to Bichat’s *Anatomie Descriptive*, tom. v. p. 7.) Roux ascribes the first notice of this morbid state to Lallemand and Bichat, (*Ib.* t. v. p. 282.) It was, however, long before described by Morgagni, (*Epist.* xlv., obs. 11.); Levrèt, (*Jour. Ancien. de Méd.*, tom. xi.); and Hoin, (*Journal de Médecine*, tom. xl. p. 352.); and has since been commented upon at greater or less length by Desormeaux, (*Dict. de Médecine*, tom. ii. p. 12;) Murat (*Dict. des Sciences Méd.*, tom. xxxi. p. 186.); Gardien, (*Traité d’Accouchmens*, &c., tom. i. p. 118.); Dance, (*Archives Générales*, tom. xx. p. 524. 1829.); Heming, (*Medical and Physical Journal*, vol. lxviii. p. 107.); Boivin and Duges, (tom. i. p. 193, &c.); Lobstein, (*Path. Anat.*, tom. i. p. 57.); Cruveilhier, (*Anat. Path.*, livraison xxxiv. pl. 2.), Davis, (*Obstetric Medicine*, p. 208.); Kennedy, (*Dublin Journal*, vol. xiv. p. 322.) &c. &c.

The longitudinal hypertrophy of the cervix uteri is liable to be confounded with other morbid states of the organ. “This disease,” says Dr Kennedy, “has been mistaken for polypus, and its removal has been attended with fatal results. In the hypertrophy of the neck, from the os remaining open with the exception of its altered position, it is, however, most likely to be mistaken for prolapsus. The detecting, by a carefully conducted examination per vaginam, and, if necessary, by the rectum, the elongated or outstretched neck of the uterus, whilst the fundus of the organ is perceptible of its natural size, and in its usual position in the pelvis, will sufficiently establish the diagnosis. (*Dublin Journal*, vol. xiv. p. 322.) The exact height and position of the fundus uteri, which are thus requisite for the diagnosis in some cases, can only, as we have already shown, be ascertained by the aid of the Bougie, when the abdominal parietes are sufficiently dense to oppose a perfect tactile examination at the hypogastrium. In hypertrophy of the cervix, the use, however, of the Bougie is still greater in another view. “A sound,” says Desormeaux, in his article on “*Allongement du col de l’Uterus*,” “carried into the os tinæ penetrates to the depth of five, six, seven inches, or even more.” “This last circumstance,” he observes, “is primarily important in fixing the diagnosis. (*Dictionnaire de Médecine*, tom. ii. p. 13.) Desormeaux is at the same time certainly wrong when he adds that we may thus “easily distinguish elongation of the cervix from complete prolapsus of the uterus, in as much as, that in the latter a Sound would scarcely penetrate above two inches in depth.” In complete prolapsus, the uterus, it is true, does occasionally retain its normal length; but as I have already stated, the reverse is much more generally the case, and the

prolapsus is usually accompanied with cervical elongation of the organ, more especially if its fundus, as very often happens, has become morbidly adherent to some of the neighbouring portions of pelvic peritonæum, during the course and increase of the displacement. Even in simple and incomplete prolapsus, the uterine cavity is not unfrequently somewhat elongated; because that prolapsus in recent and subacute cases is very often the *result* merely of the general hypertrophy and increased weight of the organ; and here its increased length so far may form a valuable sign, in showing that in the treatment we must act against the hypertrophy, as the pathological cause, before we can hope to ameliorate the prolapsus, which is simply its mechanical effect.¹

When the cervix is elongated downwards from the upper part of the vagina, we may easily measure by the Uterine Sound, and by a finger in the vagina, the exact extent of its morbid prolongation; and, on the other hand, when the hypertrophied portion is situated above the vaginal roof, we may attain the same object by tracing with a finger, in the posterior reflection of the vagina, or in the rectum, the progress of the Sound as it passes upwards through the elongated and tapering cervix, until it reaches the entrance (and there the canal is generally contracted) of the cavity of the broader and bulging out body of the uterus itself. In making such an examination, we must guard against the error of supposing the instrument to be fully introduced into the cavity of the body of the uterus, when it has only reached the upper part of the occasionally dilated cavity of the cervix. Lobstein describes an instance of the disease in which the error might have been easily fallen into. "The museum," he observes, "of our Faculty (at Strasburg) contains a very interesting example. The neck of the uterus has a length of three inches and one line, its thickness at its superior part is six lines; in descending it becomes enlarged, and its cavity dilated so as to give it a size of an inch and seven lines. At first view it looks like a piece composed of two uteri touching each other by their necks; no change of tissue is discoverable."—*Traité d'Anat. Pathologique*, tom. i. p. 57.

5. *Hypertrophy of the Uterus and Uterine Cavity, from the growth*

¹ The partial prolapsus, which often takes place in metritic-hypertrophy, "furnishes," observes Duparcque, "the means of assuring ourselves more directly of the state of the uterus. Unfortunately, practitioners rarely know how to profit by it. They consider solely the prolapsus, and apply a pessary, and they are astonished when it cannot be borne, or that so far from putting an end to the various pains and uneasinesses which they attributed to the prolapsus, the presence of the instrument exasperates them, or becomes even the exciting cause of more serious alterations." (*Traité sur les Alterations Organiques de la Matrice*, p. 201.)

of *Fibrous Tumours in the Parietes of the Organ*.—When fibrous tumours (the most common of all the organic diseases of the uterus) grow in the walls of the viscus, they are generally accompanied with a hypertrophied condition of the uterine parietes, exactly resembling in its nature and appearance their hypertrophied state in pregnancy. Under the irritation of an isolated fibrous tumour or tumours the surrounding hypertrophy is usually local in its seat, and confined to the uterine walls in its immediate vicinity; when the fibrous masses are larger or more numerous, the uterine hypertrophy becomes more general.¹ I have a preparation of a case of this kind, in which the organ resembled in size, and in the thickness and characters of its parietes, the uterus of the female a day or two after delivery. “The natural substance of the uterus (observes Dr Hooper) in which this tumour is imbedded, is almost always found to have undergone a decided change, having become more distinctly fibrous, and the fibres more obviously fasciculated. The quantity of these fibres, that is of the natural fleshy fibres of the uterus, is very much increased, so that the diseased structure is often surrounded by walls much thicker than those of a healthy uterus.” “In these instances (he remarks in another page) the uterus very much exceeds its natural bulk and weight after the morbid structure has been completely removed. I have found the uterus in many of these cases weigh two pounds, after having dissected out masses of subcartilaginous (fibrous tumours) or other substances.”—*Morbid Anatomy*, pp. 11 and 6.

In cases of fibrous tumours leading to uterine hypertrophy in the manner just described, the *cavity* of the uterus is frequently enlarged, as well as its parietes. “When fibrous tumours,” says Bayle, in his admirable essay on this disease, “are numerous or very large, they deform altogether the body of the uterus. Almost always when they become so large as a man’s head, they enlarge (*aggrandissent*) the uterus in every direction, and dilate considerably its cavity, (*dilatent considérablement sa cavité.*)”—*Dict. des Scien. Méd.*, tom. vii. p. 72.

The cavity of the uterus, however, is not always enlarged, even when the fibrous tumours are both large and numerous. This result, in regard to the cavity, seems to be regulated by the

¹ “The hypertrophy of the uterus is,” observes Cruveilhier, “general when the fibrous tumour directs itself towards the side of the uterine cavity; it is partial when the tumour follows an opposite course; if it occupies the fundus it is the fundus alone which becomes developed, and the rest is moulded upon it; if the anterior wall is its seat, it is the anterior wall which becomes developed; if it approaches the peritonæum, the fibres intervening between it and that membrane undergo the change. In the cases of partial hypertrophy of the uterus, the remainder of the organ may be in its natural state, but this is rare, because if the uterus is not solicited to development in the direction of its thickness, it is so in the direction of its *height*, in consequence of the slow or rapid increase of the fibrous bodies. Now a development in height or length is still always a hypertrophy.”—*Anat. Pathol.* liv. xix. Pl. 1, 2.

seat and relations of the tumours. We have observed in the disease the three following conditions of the uterine cavity:

First, The cavity is elongated and enlarged with the enlarging state of the tumour and uterine parietes, when the morbid mass grows from any point towards the interior of the organ, or when it is originally situated in the lateral walls of the body of the uterus, and so during its development tends to stretch out these walls, and consequently the contiguous cavity along with them, in a longitudinal direction.

In cases in which the fibrous tumour is seated on one side or wall of the organ, and becomes of a great size, the lengthened uterus sometimes comes to be wrapped and welded for some distance around the exterior surface of the fibrous growth. "I have seen," says Cruveilhier, "in these cases the uterus considerably elongated, and form a kind of a half-belt (*demi-cintre*) around the tumour."—*Anat. Path.* liv. xiv. pl. 1, 2. The degree of elongation and dilatation of the uterine cavity under these circumstances is very various. I have repeatedly measured it, both upon the living and dead subject, measuring three, four, and five inches in depth. Madame Boivin describes and represents a uterus of a conical shape, containing in its parietes several fibrous tumours, and having its cavity prolonged in the form of a narrow canal, to the length of nine inches.—*Treatise*, p. 179, Pl. 14. I have in my museum a preparation of this kind, in which the uterine canal measures above ten inches. The greatest elongations of the uterine cavity that I have as yet ascertained by the Bougie in cases of fibrous tumours in the living subject, are two instances where the canal was, in the one six inches in length from the os uteri to the fundus, and in the other seven and a half inches. Dr Beilby saw with me the former, and Dr Girdwood of Paddington the latter case, and both of these gentlemen assured themselves, by personal examination with the Uterine Bougie, of the accuracy of the measurements that I have stated. This hypertrophy of the walls and cavity of the uterus seems liable to occur in its greatest degree when the tumour or tumours are rapid in their growth, and make their appearance during the child-bearing periods of life. In using the Bougie in these cases the instrument sometimes requires to be so much unbent as to be nearly straight before it can be introduced; and where the elongated uterus curves around the exterior of the fibrous mass, the apex of the Sound must be passed, so as to follow the particular direction of the uterine cavity.

Secondly, The uterine cavity may retain nearly its natural dimensions and depth, or be only very slightly increased, even when the fibrous tumours are both large and numerous, provided they grow from any part towards the exterior surface of the organ, or are originally seated in the fundus uteri and not in its lateral

parietes. I have seen a mass of uterine fibrous tumours so large as to have been mistaken by one practitioner for an enormous hepatic growth, where the uterine cavity was only about three inches in depth. In this instance the tumours were evidently all growing from the peritonæal surface of the uterus, and could be felt through the thin abdominal walls adhering to it with pedicles of varying sizes, like a number of exterior polypi.

Thirdly, In connection with the existence of fibrous tumours in the uterus, the uterine cavity may be found apparently shortened in consequence of some portion of it being obliterated by adhesive inflammation from the pressure together of its opposing surfaces by the presence of the tumours. I shall state afterwards a case of this kind, where the uterine canal, as examined from the vagina, appeared only an inch in depth. In this, as in most other such cases, the cavity of the body was found concealed higher up, enlarged to some degree, but forming a short cavity from the obliteration of its inferior part. This result, as the effect of the presence of fibrous tumours, is principally observed when the tumours have been of very long standing, and when the hypertrophy of the uterine tissues that accompanied their earlier development has at last been followed by a state of atrophy of the included and compressed walls of the organ.

The practical deductions that may be drawn from the preceding remarks regarding the length of the cavity of the uterus in fibrous tumours of the organ, are so evident as to require little or no comment. I have already stated my opinion, and would repeat it here in the strongest terms, that no error is more common in practice than to mistake a fibrous tumour of the uterus for a dropsical ovary, or a dropsical ovary for a fibrous tumour.¹ I shall take another opportunity, in these contributions, of offering some suggestions for the more perfect diagnosis of ovarian tumours, and their connections. In the mean time I may merely state that in the *lengthened* state of the uterine cavity, as easily ascertained by the Bougie during life, we have, in many instances, an additional physical sign between the two classes of diseases alluded to, subject to exceptions which I will subsequently mention; and if the elongated uterine cavity is discovered by the Bougie to run *behind* the tumour that is present, it is another and still more decisive reason for concluding that the affection is uterine and not ovarian. At the same time it is to be held in

¹ In illustration of this remark, I shall content myself with adducing one fact. Few men in England seem to have attended more zealously to the subject of ovarian tumours, and no one has laboured so much to reintroduce the excision of them as Mr Clay of Manchester. Yet out of five cases which he has lately recorded, of operations for the extirpation of enlarged ovaries, in two it was found, after the abdomen had been laid open, that the disease was not ovarian, but consisted "of anomalous and uterine tumours."—(See his *Cases of Peritonæal Section for the Extirpation of Diseased Ovaria*, p. 18.)

recollection that if the uterine cavity is of its *natural* depth, it is no sufficient reason that the hypogastric or abdominal growth is not a fibrous uterine tumour, and more careful examination under such circumstances will often show the tumour or tumours to be such, and to have either a more or less pediculated form, and attachments to the external uterine surface, or to be imbedded in the walls of the fundus. Lastly, the uterine canal is sometimes greatly *shortened* in the way described, in connection with the existence of fibrous tumours in the uterine walls. I am not aware that it is ever in this way diminished in depth from the presence of ovarian disease.

6. *Enlargement and Distension of the Uterus from Polypi, &c. in its Cavity.*—When polypi or other morbid structures form in the cavity of the uterus, they act like the presence of an ovum, enlarge the interior of the organ in proportion to their growth and size, and generally at the same time induce, as in pregnancy, a corresponding degree of thickening and hypertrophy in the uterine parietes. In such cases the Uterine Bougie shows an increased depth of the uterine cavity. The degree of increase will necessarily vary in every different instance. I have seen a retained polypus enlarging the uterus to the size of the organ at the fourth month of pregnancy. Cruveilhier has represented a large fibrous polypus as included within and distending the uterine cavity, so that the organ measured above eight inches from the os to the fundus. We shall see afterwards that it is not the mere length to which the Bougie may pass that forms the diagnostic mark under such circumstances, but that it is by the possibility of passing it on more than one side between the surface of the tumour and the interior of the uterus, or by the power of so far revolving it round, and isolating, as it were, the contained mass, that we draw the distinction between tumours situated in the cavity and those which, as described under the last head, are still imbedded in the parietes of the organ.

7. *Elongation of the Uterus in Hernia of the Organ.*—Hernia of the unimpregnated uterus is a disease of very rare occurrence. The organ, however, has been found protruding into the tumours formed by different varieties of abdominal hernia. It had passed through the crural ring in cases met with by Lallemant, (*Bulletins de la Faculté de Médecine*, 1816, tom. i. p. 1.), and Cruveilhier, (*Anat. Pathologique*, livr. xxxiv. pl. vi.); through the inguinal canal, in instances detailed by Desault and Chopart, (*Traité des Maladies Chirurgicales*, tom. ii. p. 305), and Lallemant, (*Mémoires de la Soc. Méd. d'Emulation*, 3me année, p. 323.) Most of the cases of hernia of the impregnated uterus which have been recorded by Sennertus, Hildanus, Ruysch, Ladesma,

Fisher, &c., (see the details of them collected by Dr Cormack, in *Edinburgh Monthly Journal* for 1841, p. 491, and *Ibid.* for 1842, p. 28,) were instances in which the uterus seems to have become displaced after conception took place.

When the unimpregnated uterus forms the subject of hernia, it seems in general to be considerably elongated. In Chopart's case the organ is described as smaller than usual, rounded and lengthened in form (*arrondie, allongée*); in Cruveilhier's plate the displaced viscus is represented as drawn out to the length of five or six inches. In fact, the uterus itself must in all such cases be either much drawn out in length, in order to allow its fundus to be the subject of such great displacement, or the vaginal canal must be extended into the neck of the hernial sac, as happened in the example already referred to, as recorded in the *Bulletins de la Faculté de Médecine*.

In one of the cases of hernia of the uterus described by Lalle-mant, the patient applied for advice in consequence of the super-vention of symptoms of strangulation. The sac, on examination, was supposed to contain a portion of intestine; but the age of the patient, &c., prevented an operation being attempted. On examination after death, the hernial tumour was found to be composed of two folds of omentum, two hydatid cysts, the ovaries, Fallopian tubes, and uterus. In relation to the difficulty of the diagnosis in this and similar cases, Murat observes, that "hernia of the unimpregnated uterus is most frequently confounded with that of other parts of the abdomen, and there are *no* pathogno-mic signs by which we can recognise it." (*Dict. des Sc. Méd.* vol. xxxi. p. 228.) We may, as Nauche advises, so far over-come the difficulty, by finding, on vaginal examination, "the uterus situated high in that canal more or less devious, the ori-fice turned to the side opposite that of the hernia, and on press-ing it with the finger, we impart a certain mobility to the hernial tumour." (*Maladies de l'Uterus*, p. 114.) A much more deci-sive means of solving the problem will be afforded by the use of the Uterine Bougie. If, instead of trusting to the preceding points as ascertainable by the examination of the os and cervix with the finger, we pass the Bougie into the uterine orifice and its elongated cavity, both the direction which the instrument will, during the course of its introduction, take towards and into the mass of the tumour, and the power of feeling its apex in the fundus uteri, through the hernial walls, after it is fully introduc-ed, will at once place the matter beyond the possibility of doubt. In this procedure it will be proper to recollect, that in some cases a slender, and it may be even a flexible Bougie will be re-quired, in order to overcome the contractions, and irregularities of the uterine cavity that may be present.

PART IV.

ON THE MEASUREMENT OF THE CAVITY OF THE UTERUS AS A MEANS OF DIAGNOSIS IN SOME OF THE MORBID STATES OF THAT ORAN.

In our last communication, we described a number of morbid conditions of the uterus in which the cavity of that organ is more or less elongated. We showed that the diagnosis of these affections could be greatly advanced by ascertaining, through the use of the Uterine Bougie, the exact extent and degree of the existing elongation. It was at the same time remarked, that in some pathological states of the uterus its cavity is shortened and diminished in depth. On the present occasion, we purpose to describe briefly this latter set of cases, and will point out in what respects their discrimination during life may be promoted by the employment of the Uterine Sound.

INSTANCES OF DIMINISHED LENGTH OF THE UTERINE CAVITY.

The Cavity of the Uterus, when shorter than natural, may have its depth diminished as the result of malformation, of disease, or of displacement.

1. *Preternatural shortness of the Uterus from original malformation of the organ.*—Few of the malformations of the uterus, with the exception of the duplicity and absolute deficiency of the organ, have as yet attracted much attention. It would, however, be easy, we believe, to bring together, by a little patient research, a considerable series of cases in which the organ was found less than its normal length by an inch or an inch and a half. In some instances, in fact, the cervix of the uterus is alone present, and the body and fundus of the organ are imperfectly or totally undeveloped. In more strict terms, the lower extremities of the Fallopian tubes, instead of coalescing and becoming evolved into the body and fundus of the uterus, remain separate, retain their tubal character, and open into the superior part of the single cavity of the cervix. Such appears to us to be the explanation of the case, for example, described by Lauth, in which the cervix was sufficiently well formed, with the tubes opening into it almost directly, and only separated by a small cavity.—(Andral's *Anatomie Pathologique*, tom. i. p. 677). Morgagni speaks of a uterus in which the distance from the os to the fundus was not so much as the breadth of the thumb. The genital organs were in other respects malformed.—(Epist. xlv. 20, Alex-

ander's Translation, vol. ii. p. 661.) Dr Dewees mentions an instance of amenorrhœa in which the uterus was of "a size not exceeding the thumb of a man,"—(*System of Midwifery*, p. 69, ed. of 1837).

In that particular variety of malformation which various pathologists have described under the name of "oblique uterus," and where the organ originally lies with its fundus directed to one side of the pelvis, and has one set of its lateral ligaments shorter than another, the organ is sometimes, though not always, shorter than natural. Tiedeman describes an oblique uterus two inches and a line in length, and in which the cavity would measure considerably under two inches, (*Von den Cowperschen Drüsen des Weibs*, &c. p. 26).

In all cases in which the uterus is malformed and shortened in the modes we have alluded to, the Uterine Sound will probably afford us important diagnostic information, by enabling us to measure the exact degree of diminution in the length of the cavity of the organ. To make the information more certain and precise, it will be necessary at the same time to ascertain, by a hypogastric or rectal examination, that the apex of the instrument has really reached the superior end of the uterine body, and hence, that it is not arrested in its progress by any structure in the cavity, or by any flexion in the walls of the viscus, such as we shall afterwards fully describe.

2. *Uterine canal shortened from stricture or partial obliteration.*—"A stricture," says Dr Baillie, "is sometimes formed within the cavity of the uterus, so that its cavity at one part is obliterated entirely. This, (he adds) I believe almost always to take place at one part, namely, where the cavity of the fundus uteri terminates, and that of the cervix begins, for in this place the cavity of the uterus is narrowest. As the sides of the cavity round this place lie very near each other, and form naturally a small aperture; it is probable that some slight inflammation may unite the parts together, and shut up the aperture; or the parts may gradually approach each other without this cause, as in the stricture of the urethra."—*Morbid Anatomy*, edit. of 1812, p. 379).

The morbid state which Dr Baillie has so accurately described in the above quotation, as the result of his observations upon the dead body, could only be detected upon the living subject, by examination with a Uterine Probe or Bougie. Nor would the diagnosis be difficult, for at the same time that it was found that the Bougie was completely arrested in its progress upwards, at the distance of an inch, or an inch and a half from the os tincæ, it might be ascertained by a hypogastric examination, that it was still far from having reached the fundus uteri.

Since the time that Dr Baillie wrote, Professor Mayer of Bonn has shown that in old persons, the os internum or cervico-uterine orifice is so often obliterated, that it may be almost looked upon as a normal condition, connected with the general atrophy of the viscus that takes place in very advanced life.—(*Beschreibung einer Gra-*

viditas Insterstitialis Uteri, p. 14). In one or two aged patients I have found it impossible, during life, to pass the smallest probe through the os internum, probably owing to the contraction in question. The cases I allude to were those of females who in earlier life had produced children, and where there was therefore no original stricture or malformation.

Stricture of the os internum is, like diminution in the size of the os tincæ, not unfrequent in females affected with dysmenorrhœa, and who, though married, have never had children. In several cases I have met with difficulty and obstruction in passing through the opening between the cavities of the neck and body of the uterus, a sound or probe that had already passed easily and freely through the os tincæ. I have at present under my care a case of this kind in which there is a most remarkable degree of antroversion of the whole uterus. Jahn, in his *Essay on the Oblique Uterus*, mentions an instance of that malconformation where, after death, the os internum was found so narrow that a fine probe could not be passed through it, (*ut subtilissimo stilo transitum denegaret*); and yet the os tincæ was well formed, (*De Situ Uteri Obliquo*, in Schlegel's *Sylloge Operum Obstetr.*, tom. i. p. 268). In Ruysch's *Catalogue* a uterus is mentioned, with the os internum so small as not even to admit the head of a small needle, (*ne caput quidem aciculæ minoris admittere posset*). *Thesaurus Anatomicus*, vi. No. 85.

Occasionally the whole cavity of the body of the uterus is obliterated, from the os internum to the fundus, and yet the cavity of the cervix continues patent. Cruveilhier speaks of having seen a case of this kind, "in which there was no trace of a cavity in the body of the organ, although the cavity of the neck remained." (*Descriptive Anatomy*, vol. i. p. 621, of Dr Madden's translation). An example of the same kind has been represented by Madame Boivin in the plates attached to her treatise on diseases of the uterus, (see plate xiii. fig. 3.)

The cavity of the uterus is, in some rare cases, partially obliterated, in consequence, as has been already stated, of the development of fibrous tumours in the walls of the organ. Under such circumstances, the obliteration is the result of inflammatory adhesions, formed between those portions of the opposed surfaces of the lining membrane of the uterus, that happened to be maintained in a state of close and morbid apposition, by the presence and pressure of the neighbouring tumours. The adhesive inflammation thus excited occasionally extends to some distance from its original seat. In all cases, however, the cavity of the cervix seems to escape, and the portion of the cavity of the body that is placed above the stricture frequently becomes distended and enlarged, from the accumulation of morbid mucous secretions within it. Cruveilhier has described a very illustrative case of this kind, in his *Anatomie Pathologique*, livrais. xiv. A preparation was presented to the Anatomical Society of Paris, as a morbid ovary. In exter-

nal appearance, it had much more resemblance to an ovarian than an uterine disease. On more minute examination and dissection, however, it was found to consist of an agglomerated mass of fibrous and fibro-calcareous tumours, the whole forming a shapeless body, with an irregular, tuberculated surface. The tumours varied in size, from a pea to a large compound one weighing by itself about $1\frac{1}{2}$ pounds. On cutting into the midst of the mass, a cavity was found, filled with reddish serum, which it was easy to see was the cavity of the body of the uterus. This cavity was a shut sac, there being no opening from it. Inferiorly, its communication with the cervix uteri was entirely obliterated. When examined as to its vaginal relations, the uterus, (or uterine canal) seemed to terminate at an inch above the os tinæ. A blunt stilet, (adds Cruveilhier) passed in all directions, could not discover above this point any opening into the uterine cavity above. If the same means had been employed, as a matter of diagnosis during life, the same result would have been obtained as in the post-mortem examination, and that result would have afforded pretty conclusive evidence that the disease was not ovarian, because the uterus does not seem to be liable to become occluded in the course of its cavity, in connection with ovarian growths; and besides, the use of the Bougie would have shown the uterus imbedded in the tumour, and probably the partial canal of the cervix running in such a direction in relation to the tumour as to add further testimony to its non-ovarian character.

3. *Diminished depth and effacing of the Uterine Cavity in Inversion of the Uterus.*—We believe that the diminution in depth, and, in extreme cases, the total obliteration which the canal of the uterus undergoes in inversion of the organ, will generally give us the power of distinguishing this morbid state from all others to which it is symptomatically allied; and more especially from those forms of polypus that occasionally so strictly resemble it, and with which it has been frequently and sometimes fatally confounded.

When inversion of the uterus occurs immediately after delivery, it can, in general, be easily distinguished from a polypus that has passed through the os uteri after the expulsion of the child, or placenta, or both, because, omitting other considerations, though in each we may find in the vulva or vagina, (if we are led to make an examination by the severity of the symptoms,) a large fleshy tumour, yet this tumour, in the case of polypus, can be proved not to be the displaced uterus, as the fundus uteri can still be felt above the pubis, whilst the reverse is true of inversion. If any doubt remained, in consequence of difficulties in the way of the hypogastric examination, or otherwise,¹ a Bougie cautiously passed by the stalk of the vaginal

¹ For cases of polypus of the vagina after delivery mistaken for inversion, see Ramsbotham's *Practical Observations*, vol. ii. p. 473, and Gooch's *Account of Diseases of Women*, p. 282; and for cases of inversion under the same circumstances, mistaken for polypus, see *Gazette Médicale* for 1832, p. 422.

tumour, would, if it were a polypus, prove at once the uterine cavity to extend upwards to the length of six or seven inches, and if desired, would enable us further to feel more distinctly through the hypogastrium, the fundus uteri still remaining in situ. If the tumour were the inverted fundus of the uterus, the cavity of the organ would, on the contrary, be found shortened to an inch or two on all sides, and it would be found difficult, or impossible to bring, as usual, any part fully within the reach of an abdominal examination. In those rare instances in which the inversion was complete, the orifice and cavity of the uterus would be found entirely effaced.

The difficulty, however, of distinguishing between polypus and *inversio uteri* is greatly increased when the diagnosis is attempted after the puerperal uterus has diminished to its normal volume, or when the patient applies for advice at a distance from the period of confinement, and the inversion is only partial. Under such circumstances it has repeatedly happened that a polypus has been mistaken for an inverted uterus,¹ or the still more dangerous error committed of considering an inverted uterus to be a polypus, and treating it accordingly.² Such errors involve not only the comfort, but the life of the patient.

It is true that a diagnosis can generally be established with considerable certainty between polypus of the uterus and partial chronic inversion of the organ, by attending, amongst other points, particularly to the two circumstances, that however similar in other respects, the tumour formed by inversion is, 1st, in its history, traceable to having appeared immediately after delivery; and, 2d, in its character, it differs from polypus in being sensitive to a greater or less degree to the touch, while the polypus is not so. We must, however, at the same time, hold in view that some fibrous polypi, when they carry down before them and are covered with a layer of true uterine tissue, or when temporarily inflamed, are found to be sensitive,³ and that the inverted uterus becomes almost insensible when long ex-

¹ See cases in *Ansiaux Clinique Chirurgicale*, p. 207; *Acta Havniensia* (1818) tom. v. p. 51.

² On cases of inverted uteri mistaken for polypi, see Morgagni *de Sedibus*, &c., epist. xlv., No. 4, Palletas' *Exercitationes Pathologicae*, pp. 17, 18. Gooch, in his *Diseases of Women*, (1831) p. 265, gives an instance where Dr Hunter applied, by mistake, a ligature to an inverted uterus. A preparation illustrative of this error was in the museum of the late Dr Hamilton; the patient, as in Dr Hunter's case, having died with the uterus partially cut through with the ligature. Occasionally the uterus has been included without fatal effects; see numerous quotations in Dr Burns' *Principles of Midwifery*, (1837) p. 128.

³ "It is said that an inverted uterus is sensible to the touch, while polypi, on the contrary, are void of feeling. This can never be an accurate mode of forming a diagnosis, as we can only judge of the sensibility of the tumour by the expressions of the patient, which are regulated more by disposition than by the extent of her sufferings. I lately attended a lady with uterine polypus, and had I judged solely by the complaints of my patient, I should have pronounced the polypus to have been more sensible than an inverted uterus usually is."—*Dr Chas. Johnstone in Dublin Med. Reports*, vol. iii. p. 488.

"We shall always find it difficult to distinguish between the sensibility of the tumour

posed;¹ and again the fact, that the tumour first appeared immediately after delivery, is not itself conclusive, because in some cases of inversion the accident has not caused such severe symptoms as to be recognised at that moment,² and again, the first time a polypus passes from the uterus to the vagina is occasionally immediately after labour.³ In their physical character, the two diseases often very nearly resemble one another. "When the uterus," says Dr Gooch, "is only partially inverted, that is, when its fundus only is drawn down through its orifice into the vagina, and the patient has survived for many months, the tumour feels exactly like a polypus of the fundus. . . . In the smoothness of its surface, the roundness of its body, the narrowness of its neck, and its being encircled by the orifice of the uterus, it sometimes *exactly* resembles polypus of the fundus." P. 255.

To show still more strongly the difficulties which occasionally intervene in the distinction between chronic inversion of the uterus and polypus, I will adduce the testimony of one or two writers, whose authorities on this point are such as to command all confidence.

Mr Newnham, in his learned *Essay on Inversion of the Uterus*, after having brought together the opinions of many authors—ancient and modern—British and foreign—upon this question in diagnosis, adds, "on reviewing the foregoing testimony we shall be induced to conclude that it is always difficult and sometimes impossible, with our present knowledge, to distinguish partial and chronic inversion of the uterus from polypus." *Essay on the Symptoms, &c. of Inversio Uteri*. London, 1818, p. 82.

In his elaborate work on *Operative Midwifery*, Professor Kilian offers a nearly similar observation,—“An inverted uterus may so de-

and sensation occurring in neighbouring viscera, which are irritated by the process of examination; while, too, it must be remembered, that the sensibility of the inverted uterus is greatly diminished in its chronic stage, and that the sensibility of polypus may be increased by the presence of inflammatory action.—*Newnham on Inversio Uteri*, p. 83.

¹ "It is said that the polypus is usually indolent, and that the fundus of the uterus has an exquisite sensibility, but very often one meets with painful polypi; and it must be so, since they are very often covered with the tissue of the uterus. Their lower part may be insensible, because this envelope is too thin, or it may be perforated. On the other hand it is certain that the sensibility of the inverted uterus gets duller after a time."—*Lisfranc Clinique de la Pitié*, tom. vii., p. 133.

"In time, the surface of an inverted uterus becomes less sensible to external impressions."—*Jourdan, Dict. des Sciences Médicales*, tom. 23, p. 288.

"Dr Montgomery has in his museum a preparation of inverted uterus which had during life been quite insensible to the application of the needle."—*Dr Burns' Midwifery*, p. 561.

² "The nature and even the facts of the accident have often not been discovered till after the lapse of many days, weeks, or months subsequently; and in a smaller number of cases not till after the death of the subject."—*Davis' Obstetric Medicine*, p. 1088.

³ Two cases of this nature are given by Levret in his paper on uterine polypi, in the *Mémoires de l'Académie Royale de Chirurgie*, tom. iii., pp. 543, 545.—See also Gardien's *Traité des Accouchemens*, tom. iii., p. 316; Delppech's *Précis des Maladies Chirurgicales*, tom. ii., p. 586; three cases in the *Journal Hebdomadaire de Médecine*, No. 44; *Ramsbotham's Observations*, vol. ii., p. 473. I have seen one come down after a premature labour.

ceitfully (*tauschend*) resemble a polypus that the diagnosis is scarcely possible." B. ii. p. 280.

In a clinical lecture on inversion of the uterus, Velpeau, in alluding to the diagnosis of that disease from polypus in some very difficult instances, adds, "there are cases in which doubt is the only rational opinion." (*le doute est la seule opinion rationnelle.*) *Clinique Chirurgicale*, Paris 1841. Tom. ii. p. 425.

"When (observes Lisfranc, *Clinique*, vol. iii. p. 135,) the polypus or inversion has only partially opened the os uteri, we are assured that the diagnosis is impossible—authors do not even consider the case." "From the facts we have adduced," he adds (p. 136,) "one may easily conceive the immense difficulties met with in cases of this nature; thus under a great number of circumstances, the most distinguished practitioners have believed that they had tied polypi, when they had included the organ of generation itself in the ligature; and in other cases they have supposed they had removed the uterus either wholly or in part, when they had only relieved their patients of polypous tumours."

In order to resolve the difficult problem in uterine diagnosis to which these remarks refer, Malgaigne some time ago proposed a means which is thus described; (Lisfranc, *Clinique de la Pitié*, tom. iii. p. 137,) "a curved catheter is introduced into the bladder, it is then carried backwards and its concavity directed downwards so as to bring the point of the instrument into the bottom of the uterine sac: the index finger is then introduced into the vagina, where the point of the catheter is as easily felt as it is in the hypogastrium in ordinary catheterism. Thus the diagnosis is established, "but there are circumstances," continues Lisfranc, "in which the catheter, in consequence of the adhesion of the organs, cannot penetrate into the sac of the inverted uterus; then it might be erroneously believed that we had to do with a polypus." Setting this last objection aside, we doubt entirely the applicability of such a means of diagnosis in this case as that proposed by Malgaigne. The urethra of the female is placed in such a direction in relation to the other pelvic contents, that if the stem of an ordinary male catheter be held in it, the apex of the instrument, when turned backwards, will look posteriorly to the hollow of the sacrum, and cannot without lacerating the urethral connections, be made to return downwards towards the vagina. To enable it to do so, the instrument would require to be curved at an acute angle, and not at an obtuse,—and if of the former shape it could not be made to pass into the bladder, and even if passed could not probably be used with safety. We make these remarks after having tried repeatedly the experiment upon the dead subject.

A more safe and easy means of distinguishing a polypus from a partially inverted uterus, will be found in the measurement of the uterine cavity, by the introduction of the Sound. In some doubtful instances its aid will afford us a certain mode of complet-

ing the diagnosis in this, a class of uterine cases, in which, above all others, the prognosis and treatment are almost entirely dependent upon the accuracy of our diagnosis.

To avail ourselves of the information afforded by the measurement of the Bougie, it is to be held in view that in polypus the depth of the uterine cavity is not necessarily diminished, but sometimes the reverse, while in inversion it is always diminished to a great and notable degree.

In four cases of polypi, of considerable size, projecting through the os uteri, and which I have had occasion to remove, within the last few months,—the Bougie in all, when passed by the side of their pedicles into the interior of the uterus, showed its cavity to be of the natural depth. In some preparations I have seen the cavity elongated, in consequence probably of its distension by the polypus, previous to the protrusion of the latter. On the other hand, in partial chronic inversion of the uterus, with the fundus uteri passed downwards and projecting through the os, the uterine cavity must be necessarily diminished on all sides in depth, by this doubling up of the organ; and further, this diminution of its depth must be proportionate in its degree to the degree of the inversion, so that ultimately, if the inversion becomes, as sometimes happens, complete, the cavity will, of course, be entirely obliterated. In a common case of such partial inversion and protrusion of the fundus as is liable to be confounded with a polypus projecting through the os, the depth of the interior cavity would be found diminished, at least by more than a half, or might measure on all sides about an inch or less in depth, instead of the usual length of two and a half inches.¹ In making this measurement with the Bougie, it will always be requisite to ascertain accurately that the depth of the uterus is lessened in the same way at every point around the stem of the tumour, otherwise we might mistake a polypus, which by adhering to one side of the cavity, diminishes by the presence of its pedicle the depth of that one side merely, for an inversion of the uterus which diminishes the depth of the cavity equally on all sides. It is for this reason that we believe the employment of the finger alone, to ascertain this shortening of the uterine cavity, as recommended by Boyer, (*Maladies Chirurgicales*, tom. x. p. 583) and Dupuytren, (*Leçons Orales*, tom. iii. p. 535) is quite insufficient. In most cases it is too large a body to be passed without force and pain, if at all, into the contracted cervical cul-de-sac,—and even if passed to its full depth, it could never leave us perfectly sure that there was not a narrow communication at some point with the uterine cavity beyond.

¹ In a case in which the inverted uterus was tied in the Lyons Hospital, under the idea that it was a polypus, the patient died on the fifth day. On the post-mortem examination, the vagina and uterus were of the natural size; and the uterine cavity was on all sides reduced to *seven or eight lines in depth*, (dans tous les points de son étendue sept ou huit lignes de profondeur). Petit, in whose practice the case occurred, relates that four “*Maitres de l’Art*,” after a careful tactile examination, all pronounced the

As a general rule then, it will, we believe, be found that, in cases of tumours projecting through the os uteri, and when the other symptoms leave any doubt as to whether the tumour be a true polypus or merely the fundus of the organ chronically inverted, the employment of the Uterine Bougie will enable us to decide the diagnosis, and hence also, in a great measure, the prognosis and treatment, by the positive or negative information which it affords with regard to the shortening or non-shortening of the uterine cavity. For,—

1. If the Bougie passes into the uterine cavity to its usual depth, of two inches and a half or more, the disease is not inversion of the fundus,—a fact, the certainty of which may, while the Bougie is still in utero, be farther corroborated, by the fundus *in situ* being actually felt through the hypogastric walls whilst it is pushed forward on the apex of the instrument, or through the rectum, whilst by the same means it is retroflected in the modo already described upon the front wall of the bowel. In this case the tumour is one which is in general safely and easily removeable. But,—

2. If the uterine Bougie cannot pass at any point around the stem of the tumour to a greater extent than about one inch, the uterine cavity may be considered as shortened by inversion, and the protruding mass cannot be interfered with without imminent danger to the patient. When in any case this last point is positively ascertained, another consideration may arise.—Is the general shortening of the uterine canal the result of simple inversion of the uterus, or of inversion complicated with, and produced by the attachment of a polypus to the interior of the fundus uteri? The decision of this point may be of the first importance, both as regards the propriety and the safety of any further interference. If the disease be simple inversion, no operation would be attempted, unless under the call of very anxious and urgent reasons. If the inversion be the result of the weight and dragging of a polypus, then by removing the latter, the uterus may itself become replaced, and the patient be restored to the enjoyment of perfect health. In making this additional diagnosis between simple and complicated inversion, the previous history of the patient, and the characters of the tumour, may be sufficient to guide us, but both again may be liable, in particular instances, to lead us into error. The length of the whole interior of the uterus, as made up by the *double* measurement, first of the depth of the cul-de-sac of the cervix, and secondly, of the inverted portion from the roof of this cul-de-sac to the apex of the inverted tumour, may afford us more positive information. When added together, the two measurements will, in a case of simple *inversio uteri*, not exceed much, if at all, the normal length of the cavity of the organ;—in a case of inversion complicated with polypus, they will *exceed* this standard in a ratio proportioned to the size of the polypus and the probable elongation of the uterine tissues which it has produced.

“The *only danger*,” says Dr Gooch, “attendant on the operation on polypus is, that the ligature may include a portion of the uterus.” (p. 264). This danger, which has led to a fatal result in many master-hands,¹ will be easily avoided, by the previous use of the Bougie in the way we have suggested, so as to ascertain the presence or absence of any co-existent degree of inversion. If the polypus be found complicated with inversion, but yet has a sufficiently marked narrower part or pedicle connecting it with the fundus uteri, its removal in the usual way, by the ligature or knife, may be safely accomplished, if great caution be employed. If the polypus, however, adheres by a broad base, and is decidedly fibrous or cartilaginous in its structure, the case would probably form an appropriate one for the operation that has been had recourse to in several instances of late for the removal of fibrous tumours in the wall of the uterus,—namely, dividing by a longitudinal or crucial incision, the thin layer of uterine tissue, covering the projecting part of the tumour, and afterwards enucleating the mass of which it consists. In this way the source of danger pointed out in the quotation from Dr Gooch would be so far avoided.

In the preceding observations I have not adverted to the distinction between *complete* chronic inversion of the uterus, where the cavity is entirely effaced, and polypus of the neck or lips of the uterus. I have reserved this particular and sometimes puzzling case for consideration under another head.

¹ See, for example, a case of Dr Denman's in his *Introduction to Midwifery*, p. 106, (Ed. of 1816). *Herbiniaux, Traité sur divers accouchemens*, §c. tom. ii. p. 35, and obs. xvii. &c.

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